

SCOPING OPINION

Application Site and Description of Development

Request for Scoping Opinion: Application for Scoping Opinion for Proposed Oxford Flood Alleviation Scheme

The Environment Agency has requested a scoping opinion and submitted a scoping report providing details of the proposed development, dated 8th September 2016.

More detail about the proposals

The Environment Agency seeks a scoping opinion from Oxfordshire County Council in respect of proposed development for a flood alleviation scheme running from north of Botley Road to Kennington through the parishes of North Hinksey, South Hinksey and Kennington and the district council areas of the Vale of White Horse and Oxford City. The development would involve the extraction of around 38,640 m³ of sand and gravel as well as the removal of other materials including soils and alluvium giving a total of around 390,251 m³. The scheme also involves the construction of flood walls and embankments and bridges and culvert works.

The Environmental Statement should be submitted as a separate document from the planning application and would need to include the information as set out in Parts I and II of Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011. Please find attached document in **Annex 1**.

The national Planning Practice Guidance states that a Scoping Opinion should clarify what the main effects of the proposed development are likely to be. The council has consulted widely and consultees as well as third parties with detailed knowledge of the area have responded in considerable detail. The consultation responses set out in **Annex 2** have been received in relation to the Scoping Request submission. Oxfordshire County Council recommends that the details requested by these consultees and third parties are incorporated into the Environmental Statement.

Assessment

Specific Chapters

The following potential topics were proposed in the Scoping Report Covering Letter:

1. River Flow and Morphology;
2. Groundwater;
3. Water Quality;
4. Ecology and biodiversity of the river and other water bodies;
5. Ecology and biodiversity of the land;
6. Landscape and Visual Impact;
7. Cultural Heritage;
8. Archaeology;
9. Traffic and transport;
10. Recreational use;

11. Noise and vibration;
12. Air quality;
13. Soils and land use;
14. Land contamination;
15. Carbon and sustainability including climate;
16. Health;
17. Cumulative impacts.

Oxfordshire County Council can confirm that it agrees that these topics must be considered in the Environmental Statement. Please see additional comments below.

A Non-Technical Summary should also be provided.

Cumulative impacts should be considered and mitigation measures identified for all topic areas.

The water environment

Please see the detailed advice of the Environment Agency, the County Council as Lead Local Flood Authority, Oxford City Council, Network Rail, Public Health England and Mr Tim King set out in Annex 2.

Regard should be made to the relevant requirements of the Water Framework Directive and the Thames River Basin Management Plan and the possible impacts of the proposed development on their respective objectives.

The Flood Risk Assessment should reference the Flood Risk Vulnerability Classification in accordance with National Planning Policy Framework (NPPF). From this it should also be made clear if the Sequential Test or the Exception Test in accordance with NPPF is relevant.

The Flood Risk Assessment should be informed by the following information:

- Existing land survey data;
- Existing and proposed modelling (based on land survey data and detailed plans);
- Provision of plans which indicate the existing flooded area and volume for a range of event (not just the 1 in 100);
- Proposed plans which demonstrate the areas and volume which water is expected to be displaced to, for a range of event (not just the 1 in 100);
- A register of properties which includes details of floor levels, existing modelled flood level and any future modelled flood level for a range of event (not just the 1 in 100);
- An assessment of any backwater effects (afflux) on any tributary which will be intercepted from the newly proposed channel(s);
- Detailed construction plans of the proposed development which include but are not limited to the following:
 - Layout plans;

- Proposed channel cross section and long section (including any small tributaries and/or ditches), showing existing levels, proposed invert/bank level, and modelled hydraulics levels;
- Plans of any flood defence structures;
- Pipe and culvert long sections and details.

The ongoing maintenance of the proposal should be assessed. The assessment should be informed by:

- A register identifying all flood prevention structures;
- Type of maintenance to be undertaken on each structure;
- Details and description of any required inspections and frequency of inspections required for each structure;
- Details of the frequency of maintenance and types of inspection required.

An assessment should be included of the potential effect on the operational railway and its assets. The storing of water to any depth alongside the operational railway may be an issue for the low lying earthworks. Any culverts being used as part of the Flood Alleviation Scheme will need to be assessed as to the effect this will have on the operational railway and its culverts/ditches.

The effects of the disposal site (near the Chiswell Valley) should be assessed with regard to the effect on the permeability of the soil to water and potential surface water run-off.

An assessment should be made of the effects on the disposal site on slopes where subsequent slumping of clay downslope is possible including the effect on the permeability of the soil to water.

Ecology/Biodiversity

Please see the detailed advice of the council's ecology officer, Natural England, BBOWT, Oxford City Council, the Oxford Preservation Trust, the Oxford Badgers Group, the Directors of Hogacre Eco Park, Dr Judith Webb, Mr Ben Sawyer and Mr Tim King set out in Annex 2.

Site context

The Environmental Statement should identify protected, notable or priority species, designated sites, important habitats or other biodiversity features on or adjacent to the development site including:

Conservation Target Areas

Oxford Heights West; Oxford Meadows and Farmoor, and Thames and Cherwell at Oxford.

Designated Wildlife Sites

Oxford Meadows Special Area of Conservation (SAC) (including the following SSSIs: Port Meadows with Wolvercote Common and Green, Pixey and Yarnton Meads, Wolvercote Meadows, and Cassington Meadows);

Port Meadow and Iffley Meadows Sites of Special Scientific Interest (SSSI); Osney Mead; Willow Walk Meadows; Longbridges Nature Park Fen; Chilswell Valley; Wetland South of Hinksey Meadows; Bypass Swamp, and Kennington Pool Local Wildlife Sites (LWS); Hinksey Lake proposed LWS (pLWS); Wytham Stream / Seacourt Stream; Hinksey Pools; Aston's Eyot and the Kidneys, and Bullstake Stream, Botley Park Sites of Local Importance for Nature Conservation (SLINC) .

Further information on the SSSIs and their special interest features can be found at www.magic.gov and Natura 2000 network site conservation objectives for European sites are available at <http://publications.naturalengland.org.uk/category/6490068894089216>

The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within these designated sites and should identify such mitigation measures as may be required in order to avoid, minimise or reduce any adverse significant effects.

All impacts on both statutory and non-statutory designated sites, priority habitats, protected species and notable species should be adequately assessed, mitigated and as a last resort compensated.

The scope of the area to be included needs to cover all land and structures that are directly or indirectly affected by the scheme. This includes hydrological effects and the movement of vehicles e.g. spoil haulage; plus the effects of mitigation work e.g. offsite compensation planting for example. It is not clear from the Scoping Report request document whether areas outside the immediate scheme will be covered. It is suggested soil may be disposed of on land to the west of the A34 (proposed land raising). The ecological effects of this proposal must be examined as part of the Environmental Statement, including hydrological and water quality effects on nearby LWSs.

An assessment should be made of the risks of air pollution and how these can be managed or reduced. Further information on air pollution impacts and the sensitivity of different habitats/designated sites can be found on the Air Pollution Information System (www.apis.ac.uk).

There should be a net gain of biodiversity over the entire scheme. At present it is not clear how this will be assessed. The use of a habitat impact assessment metric, such as that in development by the Thames Valley Environmental Records Centre (TVERC), is recommended; this is based on metrics developed as part of the DEFRA biodiversity offsetting pilot scheme.

Whilst addressed in other respects in other sections of this Scoping Opinion, river flow and morphology, groundwater, water quality, noise and vibration, air quality, land use and recreation, should be assessed in relation to ecology and biodiversity, especially regarding the nearby SAC, SSSIs, LWSs and SLINCs. It may be helpful to expand Table 1 to show where the various assessments will be related / cross referred.

The long-term management and monitoring of the scheme and created habitats should be secured to ensure that ecology benefits in the long term.

Regard should be made to the relevant requirements of the Water Framework Directive and the Thames River Basin Management Plan and the possible impacts of the proposed development on their respective objectives.

Local Wildlife Sites and Sites of Local Importance for Nature Conservation

The application site includes several Local Wildlife Sites (LWS), and is adjacent to others. The scoping opinion request does not refer to LWS, although it does mention sites such as Hinksey Meadow (which may coincide with LWSs). A further designation – Sites of Local Importance for Nature Conservation (SLINC) also applies in this area and these sites should be included in any assessment of effects. Sites proposed for designation (pLWS, pSLINC) should also be included.

Habitats within LWSs and SLINCs and the species they support may be vulnerable to potential impacts such as nutrient enrichment, changes in hydrology and hydrogeology, noise and vibration and these potential impacts should be assessed.

The impact of land raising on Chilswell Valley LWS requires more information should it be pursued further. This should include a hydrological survey to help the understanding of hydrological flows in the area and to assess potential impacts on the site. More information on proposed levels, soil make-up, nutrient levels and the after use of the land should also be provided.

Environmental Data

Guidelines for Ecological Impact Assessment (EclA) have been developed by the Chartered Institute of Ecology and Environmental Management (CIEEM) and are available on their website.

At an early stage records of protected species and sites (including LWSs and SLINCs), and details of habitats, should be obtained from TVERC (<http://www.tverc.org/>). Consideration should be given to the wider context of the site for example in terms of habitat linkages and protected species populations in the wider area, to assist in the impact assessment.

The Environmental Statement should identify protected, notable or priority species, designated sites, important habitats or other biodiversity features on or adjacent to the development site. Habitat and species surveys should be carried out by suitably qualified personnel. Information should also be sought from local experts, including BBOWT (Berks, Bucks, Oxon Wildlife Trust) and TVERC for input into the scheme. Information generated from the various habitat and species surveys (existing and future work) should be made available to TVERC. Ideally species data should be summarised as an annex to reports; a suitable format for this can be specified by the County Council's ecologist if required.

Protected species

The site and its surroundings include records and/or potential habitat for, some protected and notable species including bat species, otter, water vole, great crested newt, badger, hedgehog, bullhead, toad, slow worm and depressed (compressed) river mussel. We note that river, waterbody and land surveys will take into account most of these species. The Scoping Request does not specifically mention toads, or their migration routes or hedgehogs and both these species should be included in surveys. Otter surveys should include temporary lying-up places so that disturbance can be avoided during the construction phase. All protected species surveys must cover all relevant habitats, be carried out within the *optimal* survey period and must follow recognised survey guidance.

Survey reports should state whether the proposed works have the potential to impact on a European protected species and result in an offence under the Conservation of Habitats and Species Regulations 2010. If an offence is likely, the applicant will need a licence from Natural England and Oxfordshire County Council must consider whether a licence from Natural England is likely to be given before granting planning permission. Protected species surveys are generally valid for 12 months so if works are planned to occur more than 12 months after the date of the initial survey then the survey will need to be updated.

The impact of the proposals on habitats and/or species listed as 'Habitats and Species of Principal Importance' within the England Biodiversity List, published under the requirements of S41 of the Natural Environment and Rural Communities (NERC) Act 2006 should be assessed.

Compensation & Enhancement

The NPPF sets out that "*The planning system should contribute to and enhance the natural and local environment by: minimising impacts on biodiversity and providing net gains in biodiversity where possible*" and "*opportunities to incorporate biodiversity in and around developments should be encouraged.*"

In addition to appropriate mitigation and compensation, the flood alleviation scheme should result in a net gain to biodiversity. The creation of habitats should be appropriate to the targets of the nearest Conservation Target Area. Provision should be made for the long term management of created habitats. The creation of additional habitats should be quantified in relation to those which would be lost or otherwise reduced in value with clear methodology supporting it.

In terms of mitigation a full assessment of biodiversity gain/loss in order to assess the overall impact of the scheme and ensure the proposed mitigation is sufficient should be provided. Full long term (25 years plus) mitigation plans and management for any impacted habitats, protected species including bats and badgers must also be included. The England Biodiversity Strategy published by Defra establishes principles for the consideration of biodiversity and the effects of climate change. The mitigation should take into account how the development's effects on the natural environment will be influenced by climate change, and how ecological networks will be both maintained and enhanced.

The Request for a Scoping Opinion makes reference to Bulstrake Stream as a fish migration route and states that a new weir could compromise this. It goes on to state that the removal of a weir on the Hinksey Stream will compensate for this. While the removal of the weir on the Hinksey Stream is beneficial, new structures should be avoided as part of the scheme that are barriers to fish. Changes to fish migration routes resulting from the proposed development both during construction and operation should be assessed.

Consideration should be given to the re-naturalising of river habitats by the creation of backwaters, riffles etc and as ways to provide additional habitat / refuges for biodiversity to make the river system more resilient.

The impact of the importation of seed sources should be assessed in the context of the alternatives of using natural regeneration, locally harvested seed or green hay. Meadow creation in general is best carried out on poor soils with low nutrient content; reinstatement of topsoil is unlikely to be the best preparation for these areas. This should be assessed. The potential impacts of any proposed translocation of habitats including the MG4 grassland community at Hinksey Meadow should be assessed. The impact of routing the bund in the area north of Botley Road should take into account the Pontbren study (*Marshall et al., 2014 "The impact of rural land management changes on soil hydraulic properties and runoff processes"*). The proposed route for the bund will destroy a copse of trees and wildlife habitat. Assessment of the impact should include the possibility of routeing the bund to the north of the copse.

Initiatives to increase quiet recreational use of the area should not compromise the important grassland habitats of the area including the Special Area of Conservation, including the extensive management of the area by grazing livestock and hay cropping. Direct conflicts between people and livestock including the potential for the fouling of hay crop by dogs and measures to provide mitigation should be identified.

The slopes west of the A34 including Chilswell Valley LWS form part of the Oxford Heights West CTA. Chilswell Valley LWS is one of three locally designated sites in short distance from each other (the other two are Limekiln Copse and Valley LWS, Harcourt Hill Scrub LWS) significant ecological benefits could be achieved by increasing buffers and by creating better habitat connections between the sites and so could offer good opportunities for delivering biodiversity gains by replacing high intensive agricultural use between the sites with habitats of higher conservation value, e.g. diverse grasslands. This could form part of compensatory measures that as part of the scheme.

Any potential impacts on the Hogacre Common Eco Park and land owned and maintained by the Oxford Preservation Trust, undeveloped land between the main railway line and the A34 and land downstream of the proposed scheme should be assessed.

Landscape and Visual Impact

Please see the detailed advice of Natural England, Oxford City Council, the Vale of White Horse District Council, the County Council's arboricultural officer, the Oxford

Preservation Trust and the Oxford Green Belt Network set out in Annex 2.

Details of local landscape character areas mapped at a scale appropriate to the development site as well as any relevant management plans or strategies pertaining to the area should be provided. The Environmental Statement should include assessments of visual effects on the surrounding area and landscape together with any physical effects of the development, such as changes in topography.

The Environmental Statement should include a full assessment of the potential impacts of the development on local landscape character using landscape assessment methodologies. The use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2013 is encouraged. LCA provides a sound basis for guiding, informing and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character, as detailed proposals are developed. The publication *Guidelines for Landscape and Visual Impact Assessment*, produced by the Landscape Institute and the Institute of Environmental Assessment and Management in 2013 (3rd edition) is almost universally used for landscape and visual impact assessment and its use encouraged.

The character and distinctiveness of the area should be considered, with the siting and design of the proposed development reflecting local design characteristics and, wherever possible, using local materials. The Environmental Statement should detail the measures to be taken to ensure the design will be of a high standard, as well as detail of layout alternatives together with justification of the selected option in terms of landscape impact and benefit.

The assessment should also include the cumulative effect of the development with other relevant existing or proposed developments in the area. In this context the cumulative impact assessment should include other proposals currently at Scoping stage.

The assessment should refer to the relevant National Character Areas which can be found on Natural England's website. Links for Landscape Character Assessment at a local level are also available on the same page.

Arboriculture should be addressed within the Environmental Statement either within the existing section or as an additional topic. The advice of the County's Arboricultural Officer, as set out in Annex 2, should be followed to determine the scope of tree and hedgerow work and protection required. The potential loss of any trees or hedgerows should be addressed. In order to assess the impact of the development to trees on site a British Standard (BS) 5837 survey should be undertaken. This must cover all trees within the site, and include both a Tree Constraints Plan and Tree Protection Plan. Trees left in-situ with need to be protected with post and rail fencing. The scheme should include a plan and method statement outlining the construction methods and materials.

The use of the Assessment of the Oxford View Cones Study 2015 is appropriate but views from high points of Oxford looking outwards as well as views looking inwards should also be assessed.

An assessment should be provided of the future recreational uses and any potential impacts on the landscape quality of the area.

From an arboricultural perspective it is noted that the Environmental Statement will be informed by the findings of the intended BS 5837:2012 Trees in relation to design, demolition and construction and the recommendations and mitigation tree planting proposed.

Cultural Heritage including Archaeology

Please see the detailed advice of the County Council's Planning Archaeologist, Natural England, Historic England, the Oxford Preservation Trust, the Oxford Green Belt Network and Mr Tim King set out in Annex 2.

The scoping opinion requests sets out that a desk based assessment has been commissioned for the scheme. This desk based assessment will need to be included in the Environmental Statement and should be undertaken in line with the Chartered Institute for Archaeology's (CIfA) Standard and guidance for historic environment desk-based assessment particularly paragraphs 3.1.7 which requires consultation with the County Council's Archaeological service in advance of research to agree the aims and methodology of the assessment and paragraph 3.2.1 which requires a written scheme of investigation to be agreed for the assessment to ensure that the document is fit for purpose.

The report suggests that the assessment will include Lidar and cropmarks as well as Historic Environment Data. It is important that the assessment includes the plotting of archaeological features identified on the Thames Gravels Survey held by Historic England as well as an assessment of existing aerial photographs held by Historic England at Swindon and the plotting of any features identified. Visualisations of Lidar data held by the Environment Agency should also be included in the assessment. The report also highlights that the desk based assessment highlights the need for archaeological investigation and mitigation. It is important that a detailed programme of archaeological investigation and evaluation will need to be undertaken prior to the submission and determination of any planning application for the site in order to assess the significance of any known features and their settings, including the scheduled monuments known as Old Abingdon Road Culverts (List no. 1408790) and Grandpont Causeway (List no. 1007486); and to assess the potential for the area to contain previously unrecorded archaeological features and sites. It is very important that adequate evaluation, including trenching, is carried out on Old Abingdon Road where it is possible that medieval (and possibly earlier) causeway remains survive which are of equal (i.e. national) importance to those which are currently scheduled. Similar consideration should also be given to the Monks' Causeway, the path from 'the Fishes' at North Hinksey towards Osney Mead, which is thought to have had a Roman origin and the original 'Oxenford' was probably across the Seacourt Stream (at that time the main course of the Thames) at that

point. The results of this evaluation should be included in the Environmental Statement.

These evaluations will need to be undertaken in line with an agreed written scheme of investigation, agreed prior to the commencement of the investigations, and in line with the CIFAs standard and guidance's. The results of these investigations and assessment should be incorporated into the cultural heritage chapter of the Environmental Statement.

The impact of the development any listed buildings and conservation areas including the North Hinksey Conservation Area and the settings of these listed features should also be assessed.

An assessment should be made of the local historic environment issues and priorities; how the proposal can be tailored to avoid and minimise potential adverse impacts on the historic environment; the nature and design of any required mitigation measures; and opportunities for securing wider benefits for the future conservation and management of heritage assets.

The assessment should also take account of the potential impact which associated activities (such as construction, servicing and maintenance, and associated traffic) might have upon perceptions, understanding and appreciation of the heritage assets in the area. The assessment should also consider, where appropriate, the likelihood of alterations to drainage patterns that might lead to in situ decomposition or destruction of below ground archaeological remains and deposits, and can also lead to subsidence of buildings and monuments.

The proposal to carefully consider views and view cones is beneficial.

Traffic and transport

Please see the detailed advice of the County Council's Transport Development Control officer, Highways England and North Hinksey Parish Council.

Highway impacts are likely as a result of:

- Construction of a haul road and associated changes to the highway required to facilitate implementation of the main scheme. This will directly affect the following areas:
 - Hinksey Interchange spur
 - Botley Interchange/A420 slip road and Seacourt Park and Ride
 - A423 Southern Bypass
 - Abingdon Road (albeit making use of an existing junction and track road)
- Construction of new culverts under Old Abingdon Road (requiring this road to be closed).

- Construction of new culverts under the Southern Bypass (not requiring a road closure but part of Redbridge Park & Ride will need to be closed for a temporary period to accommodate the works).
- Construction of main works which is expected to last 3 years, with a period of 15 months when lorry movements will be at their heaviest. The current estimate is that there would be one [lorry] vehicle movement each way on the A34 every 5 minutes.
- A site compound 'off-site' for storage of materials and also equipment in case of flooding.

The county council holds various traffic count data including for the following roads and junctions (traffic data is also available via the traffic models. For further details on what survey data is available and for traffic data requests the Traffic Monitoring team at the county council should be contacted via the link below:

<https://www.oxfordshire.gov.uk/cms/content/transport-monitoring>

- Abingdon Road
- Botley Road
- Old Abingdon Road
- Hinksey Hill

It is likely that existing counts will be sufficient however additional surveys may be required to support the Environmental Statement.

A thorough assessment of impacts related to construction of the scheme (during both enabling and the main construction works) is required. This should consider impacts related but not limited to:

- Construction traffic including abnormal loads ;
- Staff/contractor travel;
- Access and movements to off-site storage facilities;
- Road closures/traffic management including assessment of congestion and delay and the potential impacts this will have on rerouting of traffic and to public transport and emergency services;
- Reduction in availability of Park & Ride spaces (Redbridge Park & Ride) and potential impact on access/delay to Park & Ride buses (Seacourt Park & Ride);
- Noise and air quality impacts related to all of the above;
- Suitability of existing and proposed access points to cater for additional and larger vehicles and potential impacts on pedestrians and cycles ;
- Impacts on non-motorised users in terms of wider accessibility and Rights of Way
- Road safety.

The potential cumulative impacts on other highway works in the area during the construction period including the following schemes should be assessed:

- improvement scheme at Hinksey Hill Interchange (Works are provisionally programmed to take place in 2017/18 and 2018/19).
- Expansion of Seacourt Park & Ride.

The county council has both strategic (SATURN) and local (VISSIM) models which may be appropriate for use in assessing the traffic impacts of the proposals. The strategic model has not been calibrated and validated at a junction turning count level. This may be required before the model is considered acceptable for specifically assessing the impact of the proposals. The county council has two VISSIM models covering areas where highway works/alterations are taking place: Hinksey Hill Interchange and separately Botley Interchange. (NB there is a Christmas embargo on highway works on major roads from early December to the 1st week of January each year.)

Traffic flows on key roads to understand the impacts of construction traffic should be modelled and mitigation measures identified. Given impacts will not just be related to the number of construction vehicles on the network, but will also be brought about as a result of construction of enabling works, partial closure of Park & Rides, road closures, and diversion of traffic, buses and other road users. The mitigation strategy should be comprehensive, particularly as works are taking place on parts of the transport network that are very busy and constrained.

The following list sets out the basic requirements to be provided as part of the transport assessment based on the information provided in the Scoping Opinion request:

- Construction Traffic Management Plan (CTMP). The impact of traffic to and from the disposal sites will require assessment and consideration as part of the CTMP.
- Assessment is required of the capacity of the A34 to accommodate additional construction traffic including during peak periods. An assessment should be made of the impacts on key locations for road traffic;
- Traffic Management Strategy (TM) ;
- Public access strategy (mitigating any public transport, Park & Ride, walk and cycle impacts);
- Advanced travel and journey planning information;
- Coordination with other works. Details of traffic modelling when undertaken is required, so as to determine how best to interact with other works in the area;
- Contractor parking arrangements ;
- Road Safety Audits including with regard to the proposed new slip road onto the South Hinksey Junction of the A34.
- An assessment is required of the breakdown of working periods.

An assessment should be made of any operational impacts of the development once construction has been completed including the flow of traffic to and from the A34.

Recreational use

Please see the detailed advice of the County Council's Countryside Access team, Natural England, Public Health England, the Oxford Preservation Trust and the Oxford Green Belt Network set out in Annex 2.

The impacts on all public open land, public rights of way including the Thames Path National Trail, permissive paths and other informal access routes both within the proposed development area and in the vicinity of the development - as well as the users of those resources should be assessed. This should include walkers, cyclists

and equestrians - some of whom may have disabilities or are accompanied by children, wheel or pushchairs and dogs. As well as mitigating impacts the Environmental Statement should also assess opportunities for enhancements including informal recreation and green infrastructure. An assessment should be made of the impacts of any organised recreational activities which may be proposed and the long term management of the development area. More guidance for countryside access is set out in the adopted Rights of Way Management Plan 2015-2025 available at www.oxfordshire.gov.uk/rowip.

The National Trails website www.nationaltrail.co.uk provides information including contact details for the National Trail Officer. Appropriate mitigation measures should be incorporated for any adverse impacts.

Noise and vibration

Please see the detailed advice of the Vale of White Horse District Council set out in Annex 2.

An assessment should be made of all potential noise and vibration arising from the development. This should include the direct noise and vibration caused by construction plant and by other construction-related vehicles moving around the site and vibration impacts from the proposal to utilise excavated material for land raising to the west of the A34 near South Hinksey.

Air Quality

Please see the detailed advice of Oxford City Council and Public Health England set out in Annex 2.

An assessment should be made of the risks of air pollution including from vehicle emissions and the creation of dust and how these can be managed or reduced.

Any modelling undertaken should follow the guidelines outlined in Defra's Local Air Quality Management Technical Guidance (TG16) April 2016 and the Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) Guidance on land-use planning and development control: Planning for air quality 2015 v1.1. Any modelling should include a baseline scenario, and a future scenario with and without development. Some form of sensitivity analysis should be provided taking into account analysis by Defra showing that historical NO_x and NO₂ concentrations are not declining in line with emission forecasts, on the basis of no future reductions in NO_x/NO₂ concentrations (i.e. considering the potential effects of the proposed development against the current baseline).

When considering a baseline (of existing air quality) and in the assessment and future monitoring of impacts these:

- should include consideration of impacts on existing areas of poor air quality e.g. existing or proposed local authority Air Quality Management Areas (AQMAs)

- should include modelling using appropriate meteorological data (i.e. come from the nearest suitable meteorological station and include a range of years and worst case conditions)
- should include modelling taking into account local topography

Soils and land use

Please see the advice of Natural England set out in Annex 2.

Impacts from the development should be considered in light of the Government's policy for the protection of the best and most versatile (BMV) agricultural land as set out in paragraph 112 of the NPPF. Soils should be considered under a more general heading of sustainable use of land and the ecosystem services they provide as a natural resource in line with paragraph 109 of the NPPF.

The following issues should be assessed as part of the Environmental Statement:

1. The degree to which soils would be disturbed/harmed as part of this development and whether any 'best and most versatile' agricultural land would be affected including any that would be lost. An agricultural land classification and soil survey of the land should be undertaken at a detailed level (e.g. one auger boring per hectare supported by pits dug in each main soil type), to confirm the soil physical characteristics of the full depth of soil resource i.e. 1.2 metres.

For further information on the availability of existing agricultural land classification (ALC) information see www.magic.gov.uk. Natural England Technical Information Note 049 - Agricultural Land Classification: protecting the best and most versatile agricultural land also contains useful explanatory information.

2. Proposals for handling different types of topsoil and subsoil and the storage of soils and their management whilst in store.

Reference should be made to MAFF's Good Practice Guide for Handling Soils which comprises separate sections, describing the typical choice of machinery and method of their use for handling soils at various phases. The techniques described by Sheets 1-4 are recommended for the successful reinstatement of higher quality soils.

3. The method of assessing whether soils are in a suitably dry condition to be handled (i.e. dry and friable), and the avoidance of soil handling, trafficking and cultivation during the wetter winter period.

4. A description of the proposed depths and soil types of the restored soil profiles; normally to an overall depth of 1.2 m.

5. The effects on land drainage, agricultural access and water supplies, including other agricultural land in the vicinity.

6. The impacts of the development on farm structure and viability, and on other established rural land use and interests, both during the site working period and following its reclamation.

7. Restoration including the restored landform and the proposed afteruses of the area to be raised, together with details of surface features, water bodies and the availability of outfalls to accommodate future drainage requirements.

Land contamination

Please see the advice of Oxford City Council and Public Health England set out in Annex 2.

Details of any hazardous contamination present on site (including ground gas) should be provided. Emissions to and from the ground should be considered in terms of the previous history of the site and the potential of the site, once operational, to give rise to issues.

Land contamination risk assessments should be carried out in accordance with the Environment Agency guidance 'Model Procedures for the Management of Contaminated Land' (CLR11), BS 10175 and any other relevant guidance. The risks from all relevant sources to all relevant receptors should be assessed to help determine whether any significant effects would result from this development to the environment, and inform what types of mitigation would be necessary.

Potential environmental impacts to be assessed should include:

- effects associated with ground contamination that may already exist
- effects associated with the potential for polluting substances that are used (during construction / operation) to cause new ground contamination issues on a site, for example introducing / changing the source of contamination
- impacts associated with re-use of soils and waste soils, for example, re-use of site-sourced materials on-site or offsite, disposal of site-sourced materials offsite, importation of materials to the site.

The largest impacts for land contamination will be associated with construction in the areas of the former landfills. The proposed scope of the Environmental Statement is focused on the former landfill that is now the Kendall Copse Community Woodland. While it is acknowledged that there are other historic landfills within the area of the scheme, namely at Coldharbour and Redbridge Park and Ride, it is stated that these will not directly be affected by the scheme. However, drawing A4.01.200 shows a new culvert being placed partially in the southwest part of the Redbridge Park and Ride. This would presumably have direct and potentially significant effects on the former landfill and surrounding environment, and therefore should be assessed. There is another former landfill not mentioned in the document which is east of Redbridge Park and Ride, called Rivermead. The scheme overview in Figure 1 shows the footprint running adjacent to this former landfill. Any potential effects on this former landfill and surrounding environment as a result of the scheme should be assessed.

The Scoping Opinion request states that land contamination is proposed to be included in the Environmental Statement for the construction phase but is considered not significant for the operational phase. As the former landfill areas are to be significantly engineered in the development of this scheme, maintenance and

monitoring may be required to ensure there are no breaches of leachate to the new channel or surrounding environment.

It is stated that no soil sampling will be undertaken for the Environmental Impact Assessment, but some will be undertaken after the planning application to test what precautions will be needed to prevent pollution and to determine the waste classification of excavated materials. Some soil sampling has already been carried out in the Kendall Copse former landfill for this scheme which would be helpful to inform the assessment of potentially significant effects from this development.

There are two other potential developments which may have cumulative effects on this scheme which should be assessed: A proposal for an expansion of the Seacourt Park and Ride and a proposal for a waste recycling centre to be built on the Kendall Copse former landfill.

Carbon and sustainability including climate

Please see the detailed advice of Oxford City Council and Natural England set out in Annex 2.

The Environmental Statement should address the topic of climate change. The section on climate change should include wider sustainability considerations. The impact of climate change will need to be considered as part of other assessment work, including the ecological work (referenced above). An assessment of carbon emissions from the scheme using the Environment Agency's Carbon Calculator tool should be made with evidence that the emission of carbon has been reduced where ever possible, such as through the exclusive use of Euro 6 vehicles where possible for construction and transportation of material.

Health

Please see the detailed advice of Public Health England set out in Annex 2.

The Environmental Statement should identify and assesses the potential public health impacts of the activities at, and emissions from, the proposed development. Assessment should consider the construction, operational and possible decommissioning phases. The main alternatives considered should be set out.

The Environmental Statement should clearly identify the development's location and the location and distance from the development of off-site human receptors that may be affected by emissions from, or activities at, the development. Off-site human receptors should include people living in residential premises; people working in commercial and industrial premises and people using transport infrastructure, recreational areas, and publicly-accessible land. Consideration should also be given to environmental receptors such as the surrounding land, watercourses, surface and groundwater, and drinking water supplies such as wells, boreholes and water abstraction points. The measures proposed to mitigate any impacts should be identified. Public health impacts associated with ground contamination and/or the migration of material off-site should be assessed and the potential impact on nearby receptors and control and mitigation measures should be outlined.

When considering a baseline of existing environmental quality and in the assessment and future monitoring of impacts these:

- should include appropriate screening assessments and detailed dispersion modelling where this is screened as necessary;
- should encompass all pollutants which may be emitted by the installation in combination with all pollutants arising from associated development and transport in a single holistic assessment ;
- should consider the construction, operational, and, if relevant, decommissioning phases ;
- should consider the typical operational emissions and emissions from start-up, shut-down, abnormal operation and accidents when assessing potential impacts and include an assessment of worst-case impacts;
- should fully account for fugitive emissions ;
- should include appropriate estimates of background levels ;
- should identify cumulative and incremental impacts (i.e. assess cumulative impacts from multiple sources), including those arising from associated development, other existing and proposed development in the local area, and new vehicle movements associated with the proposed development; associated transport emissions should include consideration of non-road impacts;
- should include consideration of local authority, Environment Agency, Defra national network, and any other local site-specific sources of monitoring data
- should compare predicted environmental concentrations to the applicable standard or guideline value for the affected medium (such as UK Air Quality Standards and Objectives and Environmental Assessment Levels)
 - If no standard or guideline value exists, the predicted exposure to humans should be estimated and compared to an appropriate health-based value (a Tolerable Daily Intake or equivalent);
 - This should consider all applicable routes of exposure e.g. include consideration of aspects such as the deposition of chemicals emitted to air and their uptake via ingestion;
- should identify and consider impacts on residential areas and sensitive receptors (such as schools, nursing homes and healthcare facilities) in the area which may be affected by emissions. This should include consideration of any new receptors arising from future development

Whilst screening of impacts using qualitative methodologies is common practice (e.g. for impacts arising from fugitive emissions such as dust), where it is possible to undertake a quantitative assessment of impacts then this should be undertaken. The Environmental Statement should appraise and describe the measures that will be used to control both point source and fugitive emissions and demonstrate that standards, guideline values or health-based values will not be exceeded due to emissions from the installation. This should include consideration of any emitted pollutants for which there are no set emission limits. When assessing the potential impact of a proposed installation on environmental quality, predicted environmental concentrations should be compared to the permitted concentrations in the affected media; this should include both standards for short and long-term exposure.

For wastes arising from the installation the Environmental Statement should consider:

- the implications and wider environmental and public health impacts of different waste disposal options
- disposal route(s) and transport method(s) and how potential impacts on public health will be mitigated.

Cumulative Impacts

The cumulative impacts of the development should be assessed in relation to all of the above topic areas.

Additional Topics

In addition to the chapter headings identified by the applicant, there should be a section setting out in full the description of the development and a section addressing any alternatives considered, covering both alternative sites and alternative methods of working including the advantages and disadvantages of each.

There should be a section in the Environmental Statement to address any potential Social and Economic impacts.

Other impacts that are not considered to be significant will not need to be assessed to the same level of detail as the impacts identified above. However, some detail will be required to indicate that they have been considered and why they are not considered to be significant. Mitigation measures should also be identified as necessary.

The Environmental Statement should cover the whole site, including all ancillary development and any environmental impacts associated with the temporary cessation of construction activity and the lay-down of materials in the storage area during the winter months (the period when construction activity cannot continue due to adverse weather and ground conditions) as identified in the Scoping Opinion Request.

Conclusion

Provided that the above information is included, Oxfordshire County Council considers that the Environmental Statement would sufficiently cover the necessary information for inclusion in an Environmental Impact Assessment. However Environmental Impact Assessment is an iterative process that allows the development proposal to be continually refined. Therefore further information may be required at a later stage.

Signed *David Periam* (Case Officer)

Date: 8th December 2016

Approved by 

Planning Regulation Service Manager

On behalf of the Director for Environment & Economy

Date: 8th December 2016

INFORMATION TO BE INCLUDED IN AN ENVIRONMENTAL STATEMENT

Town and Country Planning (Environmental Impact Assessment) Regulations 2011.

Under the definition in Regulation 2 (1), 'environmental statement' means a statement:

- (a) that includes such of the information referred to in Part I of Schedule 4 as is reasonably required to assess the environmental effects of the development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile, but
- (b) that includes at least the information referred to in Part II of Schedule 4.

PART I

1. Description of the development, including in particular -

(a) a description of the physical characteristics of the whole development and the land-use requirements during the construction and operational phases;

(b) a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;

(c) an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed development.

2. An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects.

3. A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors.

4. A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from:

(a) the existence of the development;

(b) the use of natural resources;

(c) the emission of pollutants, the creation of nuisances and the elimination of waste, and the description by the applicant of the forecasting methods used to assess the effects on the environment.

5. A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.

6. A non-technical summary of the information provided under paragraphs 1 to 5 of this Part.

7. An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.

PART II

1. A description of the development comprising information on the site, design and size of the development.

2. A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.

3. The data required to identify and assess the main effects which the development is likely to have on the environment.

4. An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects.

5. A non-technical summary of the information provided under paragraphs 1 to 4 of this Part.

CONSULTATION RESPONSES

1. Archaeology (Oxfordshire CC)

The scoping opinion requests sets out that a desk based assessment has been commissioned for the scheme. This desk based assessment will need to be included in the ES and should be undertaken in line with the Chartered Institute for Archaeology's (CIfA) Standard and guidance for historic environment desk-based assessment particularly paragraphs 3.1.7 which requires consultation with ourselves in advance of research to agree the aims and methodology of the assessment and paragraph 3.2.1 which requires a written scheme of investigation to be agreed for the assessment to ensure that the document is fit for purpose.

The report suggests that the assessment will include Lidar and cropmarks as well as Historic Environment Data. It is important that the assessment includes the plotting of archaeological features identified on the Thames Gravels Survey held by Historic England as well as an assessment of existing aerial photographs held by Historic England at Swindon and the plotting of any features identified. Visualisations of Lidar data held by the Environment Agency should also be included in the assessment.

The report also highlights that the desk based assessment highlights the need for archaeological investigation and mitigation. It is important to note that a detailed programme of archaeological investigation and evaluation will need to be undertaken prior to the submission and determination of any planning application for the site in order to assess the significance of any known features and to assess the potential for the area to contain previously unrecorded archaeological features and sites.

These evaluations will need to be undertaken in line with an agreed written scheme of investigation, agreed prior to the commencement of the investigations, and in line with the CIfA's standard and guidance's. The results of these investigations and assessment should be incorporated into the cultural heritage chapter of the Environmental Statement.

2. Natural England

1. General Principles

Schedule 4 of the Town & Country Planning (Environmental Impact Assessment) Regulations 2011, sets out the necessary information to assess impacts on the natural environment to be included in an ES, specifically:

- A description of the development – including physical characteristics and the full land use requirements of the site during construction and operational phases.
- Expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed development.
- An assessment of alternatives and clear reasoning as to why the preferred option has been chosen.

- A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors.
- A description of the likely significant effects of the development on the environment – this should cover direct effects but also any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects. Effects should relate to the existence of the development, the use of natural resources and the emissions from pollutants. This should also include a description of the forecasting methods to predict the likely effects on the environment.
- A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.
- A non-technical summary of the information.
- An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.

It will be important for any assessment to consider the potential cumulative effects of this proposal, including all supporting infrastructure, with other similar proposals and a thorough assessment of the 'in combination' effects of the proposed development with any existing developments and current applications. A full consideration of the implications of the whole scheme should be included in the ES. All supporting infrastructure should be included within the assessment.

2. Biodiversity and Geology

2.1 Ecological Aspects of an Environmental Statement

Natural England advises that the potential impact of the proposal upon features of nature conservation interest and opportunities for habitat creation/enhancement should be included within this assessment in accordance with appropriate guidance on such matters. Guidelines for Ecological Impact Assessment (EclA) have been developed by the Chartered Institute of Ecology and Environmental Management (CIEEM) and are available on their website.

EclA is the process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components. EclA may be carried out as part of the EIA process or to support other forms of environmental assessment or appraisal.

The National Planning Policy Framework sets out guidance in S.118 on how to take account of biodiversity interests in planning decisions and the framework that local authorities should provide to assist developers.

2.2 Internationally and Nationally Designated Sites

The ES should thoroughly assess the potential for the proposal to affect designated sites. European sites (e.g., designated Special Areas of Conservation and Special Protection Areas) fall within the scope of the Conservation of Habitats and Species Regulations 2010. In addition paragraph 118 of the National Planning Policy Framework requires that potential Special Protection Areas, possible Special Areas

of Conservation, listed or proposed Ramsar sites, and any site identified as being necessary to compensate for adverse impacts on classified, potential or possible SPAs, SACs and Ramsar sites be treated in the same way as classified sites.

Under Regulation 61 of the Conservation of Habitats and Species Regulations 2010 an appropriate assessment needs to be undertaken in respect of any plan or project which is (a) likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and (b) not directly connected with or necessary to the management of the site.

Should a Likely Significant Effect on a European/Internationally designated site be identified or be uncertain, the competent authority (in this case the Local Planning Authority) may need to prepare an Appropriate Assessment, in addition to consideration of impacts through the EIA process.

Sites of Special Scientific Interest (SSSIs) and sites of European or international importance (Special Areas of Conservation, Special Protection Areas and Ramsar sites)

The development site is within the following designated nature conservation site:

- Iffley Meadows SSSI

The development site is near to the following designated nature conservation site(s):

- Oxford Meadows Special Area of Conservation (SAC) (including the following SSSIs: Port Meadows with Wolvercote Common and Green, Pixey and Yarnton Meads, Wolvercote Meadows, and Cassington Meadows).

Further information on the SSSIs and their special interest features can be found at www.magic.gov. The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within these designated sites and should identify such mitigation measures as may be required in order to avoid, minimise or reduce any adverse significant effects.

Natura 2000 network site conservation objectives are available on our internet site <http://publications.naturalengland.org.uk/category/6490068894089216>

2.3 Regionally and Locally Important Sites

The EIA will need to consider any impacts upon local wildlife and geological sites. Local Sites are identified by the local wildlife trust, geoconservation group or a local forum established for the purposes of identifying and selecting local sites. They are of county importance for wildlife or geodiversity. The Environmental Statement should therefore include an assessment of the likely impacts on the wildlife and geodiversity interests of such sites. The assessment should include proposals for mitigation of any impacts and if appropriate, compensation measures. The channel runs through Osney Mead Local Wildlife Site and impacts Kennington Pond Local

Wildlife Site, and may affect others. Contact the in Berks, Bucks and Oxon Wildlife Trust (BBOWT) for further information.

2.4 Protected Species - Species protected by the Wildlife and Countryside Act 1981 (as amended) and by the Conservation of Habitats and Species Regulations 2010

The ES should assess the impact of all phases of the proposal on protected species (including, for example, great crested newts, reptiles, birds, water voles, badgers and bats). Natural England does not hold comprehensive information regarding the locations of species protected by law, but advises on the procedures and legislation relevant to such species. Records of protected species should be sought from appropriate local biological record centres, nature conservation organisations, groups and individuals; and consideration should be given to the wider context of the site for example in terms of habitat linkages and protected species populations in the wider area, to assist in the impact assessment.

The conservation of species protected by law is explained in Part IV and Annex A of Government Circular 06/2005 Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System. The area likely to be affected by the proposal should be thoroughly surveyed by competent ecologists at appropriate times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the ES.

In order to provide this information there may be a requirement for a survey at a particular time of year. Surveys should always be carried out in optimal survey time periods and to current guidance by suitably qualified and where necessary, licensed, consultants. Natural England has adopted standing advice for protected species which includes links to guidance on survey and mitigation.

2.5 Habitats and Species of Principal Importance

The ES should thoroughly assess the impact of the proposals on habitats and/or species listed as 'Habitats and Species of Principal Importance' within the England Biodiversity List, published under the requirements of S41 of the Natural Environment and Rural Communities (NERC) Act 2006. Section 40 of the NERC Act 2006 places a general duty on all public authorities, including local planning authorities, to conserve and enhance biodiversity. Further information on this duty is available here <https://www.gov.uk/guidance/biodiversity-duty-public-authority-duty-to-have-regard-to-conserving-biodiversity>.

Government Circular 06/2005 states that Biodiversity Action Plan (BAP) species and habitats, 'are capable of being a material consideration...in the making of planning decisions'. Natural England therefore advises that survey, impact assessment and mitigation proposals for Habitats and Species of Principal Importance should be included in the ES. Consideration should also be given to those species and habitats included in the relevant Local BAP.

Natural England advises that a habitat survey (equivalent to Phase 2) is carried out on the site, in order to identify any important habitats present. In addition, ornithological, botanical and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present. The Environmental Statement should include details of:

- Any historical data for the site affected by the proposal (e.g. from previous surveys);
- Additional surveys carried out as part of this proposal;
- The habitats and species present;
- The status of these habitats and species (e.g. whether priority species or habitat);
- The direct and indirect effects of the development upon those habitats and species;
- Full details of any mitigation or compensation that might be required.

The development should seek if possible to avoid adverse impact on sensitive areas for wildlife within the site, and if possible provide opportunities for overall wildlife gain.

The record centre for the relevant Local Authorities should be able to provide the relevant information on the location and type of priority habitat for the area under consideration.

2.6 Contacts for Local Records

Natural England does not hold local information on local sites, local landscape character and local or national biodiversity priority habitats and species. We recommend that you seek further information from the appropriate bodies (which may include the local records centre, the local wildlife trust, local geo-conservation group or other recording society and a local landscape characterisation document).

Local Record Centre (LRC) in Oxfordshire please contact:

Thames Valley Environmental Records Centre (TVERC) c/o Oxfordshire County Council, Signal Court, Old Station Way Eynsham, OX29 4TL
Tel: 01865 815451 Fax: 01865 713939 tverc@oxfordshire.gov.uk

3. Designated Landscapes and Landscape Character

Landscape and visual impacts

Natural England would wish to see details of local landscape character areas mapped at a scale appropriate to the development site as well as any relevant management plans or strategies pertaining to the area. The EIA should include assessments of visual effects on the surrounding area and landscape together with any physical effects of the development, such as changes in topography. The European Landscape Convention places a duty on Local Planning Authorities to consider the impacts of landscape when exercising their functions.

The EIA should include a full assessment of the potential impacts of the development on local landscape character using landscape assessment

methodologies. We encourage the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2013. LCA provides a sound basis for guiding, informing and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character, as detailed proposals are developed.

Natural England supports the publication Guidelines for Landscape and Visual Impact Assessment, produced by the Landscape Institute and the Institute of Environmental Assessment and Management in 2013 (3rd edition). The methodology set out is almost universally used for landscape and visual impact assessment.

In order to foster high quality development that respects, maintains, or enhances, local landscape character and distinctiveness, Natural England encourages all new development to consider the character and distinctiveness of the area, with the siting and design of the proposed development reflecting local design characteristics and, wherever possible, using local materials. The Environmental Impact Assessment process should detail the measures to be taken to ensure the building design will be of a high standard, as well as detail of layout alternatives together with justification of the selected option in terms of landscape impact and benefit.

The assessment should also include the cumulative effect of the development with other relevant existing or proposed developments in the area. In this context Natural England advises that the cumulative impact assessment should include other proposals currently at Scoping stage. Due to the overlapping timescale of their progress through the planning system, cumulative impact of the proposed development with those proposals currently at Scoping stage would be likely to be a material consideration at the time of determination of the planning application.

The assessment should refer to the relevant [National Character Areas](#) which can be found on our website. Links for Landscape Character Assessment at a local level are also available on the same page.

Heritage Landscapes

You should consider whether there is land in the area affected by the development which qualifies for conditional exemption from capital taxes on the grounds of outstanding scenic, scientific or historic interest. An up-to-date list may be obtained at www.hmrc.gov.uk/heritage/lbsearch.htm and further information can be found on Natural England's landscape pages [here](#).

4. Access and Recreation

Natural England encourages any proposal to incorporate measures to help encourage people to access the countryside for quiet enjoyment. Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways are to be encouraged. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation

of wider green infrastructure. Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate.

Rights of Way, Access land and National Trails

The EIA should consider potential impacts on access land, public open land and rights of way in the vicinity of the development. Consideration should also be given to the potential impacts on the adjacent/nearby Thames Path National Trail. The National Trails website www.nationaltrail.co.uk provides information including contact details for the National Trail Officer. Appropriate mitigation measures should be incorporated for any adverse impacts. We also recommend reference to the relevant Right of Way Improvement Plans (ROWIP) to identify public rights of way within or adjacent to the proposed site that should be maintained or enhanced.

5. Soil and Agricultural Land Quality

Impacts from the development should be considered in light of the Government's policy for the protection of the best and most versatile (BMV) agricultural land as set out in paragraph 112 of the NPPF. We also recommend that soils should be considered under a more general heading of sustainable use of land and the ecosystem services they provide as a natural resource in line with paragraph 109 of the NPPF.

Soil is a finite resource that fulfils many important functions and services (ecosystem services) for society, for example as a growing medium for food, timber and other crops, as a store for carbon and water, as a reservoir of biodiversity and as a buffer against pollution. It is therefore important that the soil resources are protected and used sustainably.

The following issues should therefore be considered in detail as part of the Environmental Statement:

1. The degree to which soils would be disturbed/harmed as part of this development and whether any 'best and most versatile' agricultural land would be affected.

If required, an agricultural land classification and soil survey of the land should be undertaken, normally at a detailed level (e.g. one auger boring per hectare supported by pits dug in each main soil type), to confirm the soil physical characteristics of the full depth of soil resource i.e. 1.2 metres.

For further information on the availability of existing agricultural land classification (ALC) information see www.magic.gov.uk. Natural England Technical Information Note 049 - [Agricultural Land Classification: protecting the best and most versatile agricultural land](#) also contains useful explanatory information.

2. Proposals for handling different types of topsoil and subsoil and the storage of soils and their management whilst in store.

Reference could usefully be made to [MAFF's Good Practice Guide for Handling Soils](#) which comprises separate sections, describing the typical choice of machinery

and method of their use for handling soils at various phases. The techniques described by Sheets 1-4 are recommended for the successful reinstatement of higher quality soils.

3. The method of assessing whether soils are in a suitably dry condition to be handled (i.e. dry and friable), and the avoidance of soil handling, trafficking and cultivation during the wetter winter period.

4. A description of the proposed depths and soil types of the restored soil profiles; normally to an overall depth of 1.2 m over an evenly graded overburden layer.

5. The effects on land drainage, agricultural access and water supplies, including other agricultural land in the vicinity.

6. The impacts of the development on farm structure and viability, and on other established rural land use and interests, both during the site working period and following its reclamation.

7. A detailed Restoration Plan illustrating the restored landform and the proposed afteruses, together with details of surface features, water bodies and the availability of outfalls to accommodate future drainage requirements.

6. Air Quality

Air quality in the UK has improved over recent decades but air pollution remains a significant issue; for example over 97% of sensitive habitat area in England is predicted to exceed the critical loads for ecosystem protection from atmospheric nitrogen deposition ([England Biodiversity Strategy](#), Defra 2011). A priority action in the England Biodiversity Strategy is to reduce air pollution impacts on biodiversity. The planning system plays a key role in determining the location of developments which may give rise to pollution, either directly or from traffic generation, and hence planning decisions can have a significant impact on the quality of air, water and land. The assessment should take account of the risks of air pollution and how these can be managed or reduced. Further information on air pollution impacts and the sensitivity of different habitats/designated sites can be found on the Air Pollution Information System (www.apis.ac.uk). Further information on air pollution modelling and assessment can be found on the Environment Agency website.

7. Climate Change Adaptation

The [England Biodiversity Strategy](#) published by Defra establishes principles for the consideration of biodiversity and the effects of climate change. The ES should reflect these principles and identify how the development's effects on the natural environment will be influenced by climate change, and how ecological networks will be maintained. The NPPF requires that the planning system should contribute to the enhancement of the natural environment 'by establishing coherent ecological networks that are more resilient to current and future pressures' ([NPPF](#) Para 109), which should be demonstrated through the ES.

8. Contribution to local environmental initiatives and priorities

Biodiversity enhancements to be provided by the scheme, such as habitat creation, should be designed to help deliver the aims of the Thames and Cherwell at Oxford Conservation Target Area (CTA). Details are available on the Wild Oxfordshire website: <http://www.wildoxfordshire.org.uk/wp-content/uploads/2014/02/Thames-and-Cherwell-at-Oxford-CTA.pdf>

9. Cumulative and in-combination effects

A full consideration of the implications of the whole scheme should be included in the ES. All supporting infrastructure should be included within the assessment.

The ES should include an impact assessment to identify, describe and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. The following types of projects should be included in such an assessment, (subject to available information):

- a. existing completed projects;
- b. approved but uncompleted projects;
- c. ongoing activities;
- d. plans or projects for which an application has been made and which are under consideration by the consenting authorities; and
- e. plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.

3. Ecology Officer (Oxfordshire CC)

Location: Land from North of Botley Road to New Hinksey in the parishes of North Hinksey, South Hinksey and Kennington

Proposal: Scoping Opinion Oxford Flood Alleviation Scheme

Site context

Conservation Target Areas: Oxford Heights West; Oxford Meadows and Farmoor, and Thames and Cherwell at Oxford.

Designated Wildlife Sites

Oxford Meadows Special Area of Conservation (SAC)
Port Meadow and Iffley Meadows Sites of Special Scientific Interest (SSSI)
Osney Mead; Willow Walk Meadows; Longbridges Nature Park Fen; Chilswell Valley; Wetland South of Hinksey Meadows; Bypass Swamp, and Kennington Pool
Local Wildlife Sites (LWS).
Hinksey Lake proposed LWS
Wytham Stream / Seacourt Stream; Hinksey Pools; Aston's Eyot and the Kidneys, and Bullstake Stream, Botley Park Sites of Local Importance for Nature Conservation (SLINC)

Comments

Thank you for consulting me on this EIA Scoping Opinion request. Generally in biodiversity terms I consider that the scoping document has considered most factors. Natural England (NE) has provided comprehensive advice on what the Environmental Statement (ES) should cover. I endorse NE's comments and consider it particularly important that impacts on statutory and non-statutory designated sites, priority habitats, protected species and notable species are adequately assessed, mitigated and as a last resort compensated. In addition, I have five main concerns: The scope of the area to be included needs to cover all land and structures that are directly or indirectly affected by the scheme. This includes hydrological effects and the movement of vehicles e.g. spoil haulage; plus the effects of mitigation work e.g. offsite compensation planting for example. It is not clear from the document whether areas outside the immediate scheme will be covered.

It is suggested soil may be disposed of on land to the west of the A34 (proposed land raising). The ecological effects of this proposal must be examined as part of the EIA, including hydrological and water quality effects on nearby LWSs.

There should be a net gain of biodiversity over the entire scheme. At present it is not clear how this will be assessed. We recommend the use of a habitat impact assessment metric, such as that in development by TVERC; this is based on metrics developed as part of the DEFRA biodiversity offsetting pilot scheme.

I consider that river flow and morphology, groundwater, water quality, noise and vibration, air quality, land use and recreation, should be assessed in relation to ecology and biodiversity, especially regarding the nearby SAC, SSSIs, LWSs and SLINCs. It may be helpful to expand Table 1 to show where the various assessments will be related / cross referred.

The long-term management and monitoring of the scheme and created habitats should be secured to ensure that ecology benefits in the long term.

My detailed comments are as follows:

Local Wildlife Sites and Sites of Local Importance for Nature Conservation

The application site includes several Local Wildlife Sites (LWS), and is adjacent to others. The scoping opinion request does not refer to LWS, although it does mention sites such as Hinksey Meadow (which may coincide with LWSs). A further designation – Sites of Local Importance for Nature Conservation (SLINC) also applies in this area and these sites should be included in any assessment of effects. Sites proposed for designation (pLWS, pSLINC) should also be included. Habitats within LWSs and SLINCs and the species they support may be vulnerable to potential impacts such as nutrient enrichment, changes in hydrology and hydrogeology, noise and vibration.

Environmental Data

At an early stage records of protected species and sites (including LWSs and SLINCs), and details of habitats, should be obtained from Thames Valley Environmental Records Centre (TVERC) (<http://www.tverc.org/>). Consideration should be given to the wider context of the site for example in terms of habitat

linkages and protected species populations in the wider area, to assist in the impact assessment.

The EIA should identify protected, notable or priority species, designated sites, important habitats or other biodiversity features on or adjacent to the development site. Habitat and species surveys should be carried out by suitably qualified personnel. Information should also be sought from local experts, including BBOWT (Berks, Bucks, Oxon Wildlife Trust) and TVERC for input into the scheme. Information generated from the various habitat and species surveys (existing and future work) should be made available to TVERC. Ideally species data should be summarised as an annex to reports; a suitable format for this can be specified if required.

Protected species

The site and its surroundings include records and/or potential habitat for, some protected and notable species including bat species, otter, water vole, great crested newt, badger, hedgehog, bullhead, toad, slow worm and depressed (compressed) river mussel. We note that river, waterbody and land surveys will take into account most of these species. The Scoping Request does not specifically mention toads, or their migration routes or hedgehogs and both these species should be included in surveys. Otter surveys should include temporary lying-up places so that disturbance can be avoided during the construction phase. All protected species surveys must cover all relevant habitats, be carried out within the *optimal* survey period and must follow recognised survey guidance.

Survey reports should state whether the proposed works have the potential to impact on a European protected species and result in an offence under the Habitats Regulations 2010. If an offence is likely, the applicant will need a licence from Natural England and Oxfordshire County Council must consider whether a licence from Natural England is likely to be given before granting planning permission. Protected species surveys are generally valid for 12 months so if works are planned to occur more than 12 months after the date of the initial survey then the survey will need to be updated.

Compensation & Enhancement

The NPPF sets out that “*The planning system should contribute to and enhance the natural and local environment by: minimising impacts on biodiversity and providing net gains in biodiversity where possible*” and “*opportunities to incorporate biodiversity in and around developments should be encouraged.*”

In addition to appropriate mitigation and compensation, the flood alleviation scheme should result in a net gain to biodiversity. I therefore welcome the intention to create habitats. These should be appropriate to the targets of the nearest Conservation Target Area. Provision should be made for the long term management of created habitats.

In terms of mitigation I expect to see a full assessment of biodiversity gain/loss in order to assess the overall impact of the scheme and ensure the proposed mitigation is sufficient. Full long term (25 years plus) mitigation plans and management for any impacted habitats, protected species including bats and badgers must also be included.

The Request for Scoping opinion makes reference to Bulstrake Stream as a fish migration route and states that a new weir could compromise this. It goes on to state that the removal of a weir on the Hinksey Stream will compensate for this. While we welcome the removal of the weir on the Hinksey Stream, new structures should be avoided as part of the scheme that are barriers to fish. Fish passes are expensive as add-ons, but should be possible to design in at low cost.

While there is reference to new river habitat, there appears to be little reference to opportunities to re-naturalise river habitats by the creation of backwaters, riffles etc. This work is an opportunity to explore ways to provide additional habitat / refuges for biodiversity to make the river system more resilient.

I welcome the intention to increase river and wetland habitat in the scheme. Imported seed sources should be avoided, using natural regeneration, locally harvested seed or green hay. Local sources have the advantage of creating a market for important sites and thus strengthening their viability. Meadow creation in general is best carried out on poor soils with low nutrient content; reinstatement of topsoil is unlikely to be the best preparation for these areas. This should be considered at an early stage because it is clear that the movement of substrates is a key engineering consideration.

I welcome initiatives to increase quiet recreational use of the area. However, this should not compromise the important grassland habitats of the area including the Special Area of Conservation, including the extensive management of the area by grazing livestock and hay cropping. Direct conflicts between people and livestock are an obvious concern; an indirect effect also of concern is the fouling of hay crop by dogs making it unsellable.

4. Transport Development Control (Oxfordshire CC)

Detailed comments

This Transport Development Control/Highways response has been prepared based on information contained in the "Request for EIA Scoping Opinion" document. This confirms that highway impacts are likely as a result of:

- Construction of a haul road and associated changes to the highway required to facilitate implementation of the main scheme. This will directly affect the following areas:
 - Hinksey Interchange spur
 - Botley Interchange/A420 slip road and Seacourt Park and Ride
 - A423 Southern Bypass
 - Abingdon Road (albeit making use of an existing junction and track road)
- Construction of new culverts under Old Abingdon Road (requiring this road to be closed).
- Construction of new culverts under the Southern Bypass (not requiring a road closure but part of Redbridge Park & Ride will need to be closed for a temporary period to accommodate the works).

- Construction of main works which is expected to last 3 years, with a period of 15 months when lorry movements will be at their heaviest. The current estimate is that there would be one [lorry] vehicle movement each way on the A34 every 5 minutes.
- A site compound 'off-site' for storage of materials and also equipment in case of flooding.

Baseline traffic data

The county council holds various traffic count data including for the following roads and junction (traffic data is also available via the traffic models, see comments below). For further details on what survey data is available and for traffic data requests the Traffic Monitoring team at the county council should be contacted via the link below.

<https://www.oxfordshire.gov.uk/cms/content/transport-monitoring>

- Abingdon Road
- Botley Road
- Old Abingdon Road
- Hinksey Hill

It is likely that existing counts will be sufficient however additional surveys may be required to support the Environmental Statement.

Traffic and transport impacts and mitigation

The Traffic and Transport section of the Scoping Opinion confirms that the assessment will consider the construction period only as operational impacts are not considered to be significant enough. Further information should be provided to support this. The assessment will cover:

- Construction during 'enabling' works e.g. construction of the proposed slip road and other access upgrades
- Construction during 'main' works

A thorough assessment of impacts related to construction of the scheme (during both enabling and the main construction works) is required and should be scoped out and agreed in advance with Oxfordshire County Council and Highways England. This should consider impacts related but not be limited to:

- Construction traffic including abnormal loads
- Staff/contractor travel
- Access and movements to off-site storage facilities
- Road closures/traffic management including assessment of congestion and delay and potential impacts this will have on rerouting of traffic and to public transport and emergency services
- Reduction in availability of Park & Ride spaces (Redbridge P&R) and potential impact on access/delay to Park & Ride buses (Seacourt P&R)
- Noise and air quality impacts related to all of the above as necessary/agreed

- Suitability of existing and proposed access points to cater for additional and larger vehicles and potential impacts on pedestrians and cycles
- Impacts on non-motorised users in terms of wider accessibility and Rights of Way
- Road safety

Committed schemes and proposals

For information, the following schemes are being progressed locally. Further details should be sought and works coordinated where necessary:

- The county council is developing an improvement scheme at Hinksey Hill Interchange. Works are provisionally programmed to take place in 2017/18 and 2018/19.
- Expansion of Seacourt Park & Ride is being considered by Oxford City Council. A planning application has not yet been submitted.

Traffic modelling

The county council have both strategic (SATURN) and local (VISSIM) models which may be appropriate in assessing the traffic impacts of the proposals.

The Oxfordshire Strategic (SATURN) Model is managed by Atkins. As OSM is a strategic model it has not been calibrated and validated at a junction turning count level. This may be required before the model is considered acceptable for specifically assessing the impact of the proposals.

The county have two VISSIM models covering areas where highway works/alterations are taking place: Hinksey Hill Interchange and separately Botley Interchange. We would be happy to make these VISSIM models available for assessing the impacts.

All modelling should be scoped and agreed in advance with the county council and Highways England.

Mitigation

The Scoping Opinion proposes to model traffic flows on key roads to understand the effects of construction traffic and if the impacts are severe then mitigation measures will be investigated. Given impacts will not just be related to the number of construction vehicles on the network, but will also be brought about as a result of construction of enabling works, partial closure of Park & Ride, road closures, and diversion of traffic, buses and other road users, for example, it is likely that the mitigation strategy will have to be comprehensive, particularly as works are taking place on parts of the transport network that are very busy and constrained.

The county council will need to be heavily involved in developing a mitigation strategy with the applicant to ensure safe and suitable operation of the highway network throughout the construction period.

Further detailed information and discussions are required to scope this, however, the following list sets out our basic requirements based on the information provided to date.

- Construction Traffic Management Plan (CTMP)
- Traffic Management Strategy (TM)
- Public access strategy (mitigating any public transport, Park & Ride, walk and cycle impacts)
- Advanced travel and journey planning information
- Coordination with other works
- Contractor parking arrangements
- Road Safety Audits

Network Management comments/issues:

- OCC Network Management require early engagement regarding TM and CTMP proposals as in some locations there may be issues that need resolving in advance of works and once we have a timeframe there may be additional concerns – such as the impact of/on other highway works in the area, which may impact on the requirements of this scheme.
- Christmas embargo on highway works on major roads runs from early December to the 1st week of January each year.
- All requests for road or lane closures will require full justification why other methods of working are not suitable, and if approved OCC will request long working days and weekend working so as to minimise the impact of these closures on the road network.
- The location of the disposal sites, as yet to be determined, may require additional consideration as part of the CTMP.
- Details of traffic modelling when undertaken is required, so as to determine how best to interact with other works in the area.
- Clearer breakdown of working periods is needed. Fifteen months over a two year period (24 months) and then a further year of heavy construction - so to clarify 27 months of work over a three year period (36 months).
- Evidence that the A34 has capacity to accommodate additional construction traffic especially during peak periods is required (and will presumably come from the modelling).
- Documentation of the consultation carried out with Highways England and their response is required.
- Will the operation be wholly out of peak hours 0730 – 0930 and 1530 – 1830
- The EIA report states: “Traffic and Transport – Not significant” for operation. Does it refer to water bound traffic only as there could be impacts on key locations for road traffic?

Site specific comments:

- 1) Botley Road traffic in off the Botley Interchange Slip road and out via Seacourt Park & Ride Lights
 - Will there be wheel washers on site – or a road sweeper.

- 2) Old Abingdon Road -
 - Need early engagement to determine method of work – assumption shouldn't be that the road is closed.
 - OCC will require long working days and weekend working to minimise the disruption to the network.
- 3) Abingdon Rd – New Hinksey.
 - Possible temporary lights - not necessarily the best solution will require early engagement to determine best method of working.
- 4) A423 Southern By Pass (Ring Road)
 - Clarification is needed to the extent of required working area, as OCC will not agree to road or lane closure of this section of road for the duration of work.
- 5) Clarification is needed as to 'slip road' / 'spur' onto the A34 at south Hinksey junction. What does this actually mean? Or is a new or improved access close to the roundabout on the South Hinksey side of the junction?

I see that there was a TS submitted as part of the planning application MW.0120/11, back in 2011.

There should be a section on transport within the EIA. This could be the TS or a more high level version of it, if a TS is also supplied.

The main issues that we would be concerned about are the impacts the HGV movements will have on A4095 Bunkers Hill/A4260 Banbury Road priority junction; and A4260 Banbury Road/A4095 Upper Campsfield Road priority junction. Traffic surveys should be undertaken to assess the existing traffic flows and compare them to that of the 2005 traffic flows that were used. Peak hours along the road network should be used, to ascertain the two-way trip movements.

I note that this application says there will be no change in HGV movements, although, we will need to consider the future likely movements upon the highway network from surrounding committed development.

I recommend that the applicant contacts TDC directly to discuss the scoping of the TS itself.

5. Oxford City Council

Having reviewed the Scoping Opinion submitted by the Environment Agency, the City Council would make the following comment

Planning Policy

The Oxford Flood Alleviation scheme is an important project for the City of Oxford. The aim of the project is to reduce the risk of flooding of existing properties in Oxford. There are currently around 4,500 properties at risk of flooding in the City and this project will reduce the number of properties in the highest flood risk to around 1,800.

In terms of Oxford's wider strategic objectives e.g. delivery of additional housing, the aim of this project is not to create additional land for development but instead to reduce the number of properties at risk from flooding.

One of the key challenges set out in the Oxford Core Strategy is responding to climate change, including the strategic objective to "*Help protect people and their property from flooding*". The Oxford Flood Alleviation Scheme will assist in the delivery of this strategic objective. As a result the development plan policies are broadly supportive of the scheme and the positive social benefits it will bring in reducing flooding risk to properties currently at risk of flooding.

The scheme is likely to give rise to economic benefits including providing alleviation for shops and businesses in the city during times of flood. Since 2007, there have been a number of flooding incidents in the City both in Summer and Winter that have caused damage to shops and businesses in terms of loss of earnings and direct water damage.

In terms of other likely future projects which may have an impact on the Oxford Flood Alleviation Scheme, it is worth considering the Seacourt Park and Ride Expansion which could come forward on a similar timescale as the Flood Relief channel. The section on cumulative impacts currently does not assess this project and a full and comprehensive review of this and other projects is something that would benefit from assessment.

The EIA itself focuses on the physical works associated with the delivery of the scheme itself. The socio-economic case for the flood alleviation scheme has been well-documented publicly however there is little evidence of this in the EIA. Presenting a balanced case which outlines any socio-economic impacts of the scheme as well as any environmental impacts should be undertaken to support any planning application going forward.

Flooding and Surface Water Management

The report states that a Flood Risk Assessment (FRA) will be provided. It is recommended that any FRA makes reference to the Flood Risk Vulnerability Classification in accordance with National Planning Policy Framework. From this it should also be made clear if the Sequential Test or the Exception Test in accordance with NPPF is relevant.

The development is essentially flood control infrastructure, which is a Water-Compatible Development which is a permissible development within all flood zones as long as it is designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

Any Flood Risk Assessment report should address the above information. Notwithstanding this it is also recommended the following is included to help illustrate any proposal:

- Existing land survey data.
- Existing and proposed modelling (based on land survey data and detailed plans).
- Provision of plans which indicate the existing flooded area and volume for a range of event (not just the 1 in 100).
- Proposed plans which demonstrate the areas and volume which water is expected to be displaced to, for a range of event (not just the 1 in 100).
- A register of properties which includes details of floor levels, existing modelled flood level and any future modelled flood level for a range of event (not just the 1 in 100).
- An assessment of any backwater effects (afflux) on any tributary which will be intercepted from the newly proposed channel(s).
- Detailed constructions plans of the proposed alterations which include but are not limited to the following;
 - Layout plans.
 - Proposed channel cross section and long section (including any small tributaries and/or ditches), showing existing levels, proposed invert/bank level, and modelled hydraulics levels.
 - Plans of any flood defence structures.
 - Pipe and culvert long sections and details.

Maintenance of the proposal will need to be address. Details of the required following will be required to ensure the effective ongoing function of the development;

A register identifying all flood prevention structures. Type of maintenance to be undertaken on each structure.

- Details and description of any required inspections and frequency of inspections requires for each structure.
- Details of the frequency of maintenance and types of inspection required.

Ecology

In terms of assessing the ecological impacts of the proposed development, the Environmental Impact Assessment should include:

- the identification of species and habitats present and the quantification of their value in objective, measurable terms;
- an assessment and quantification of the ecological impacts sufficient to determine net loss or gain, in accordance with local and national policy;
- the identification of avoidance/mitigation/compensation measures to avoid adverse effects where possible;
- an assessment of residual effects including positive effects;
- a demonstration of how the development will conserve and enhance biodiversity in accordance with local and national planning policy;
- an assessment of the cumulative effects.

In order to fully assess the impacts on ecology all potential ecological receptors must be assessed, impacts considered and relevant mitigation developed. In addition to the immediate route and work area ecological assessment must also be undertaken for any area proposed for permanent storage of soil etc.

The scoping report submitted in connection with the proposal outlines potential impacts on ecology and satisfactorily identifies the surveys required in the EIA. The Council would expect to see an assessment of the potential impacts on nearby designated sites such as SSSI's, LWS's and SLINCs particularly any indirect hydrological impacts.

All protected species surveys must cover all relevant habitats, be carried out within the *optimal* survey period and must follow recognised survey guidance.

In accordance with Core Policy CS12: Biodiversity of the Core Strategy for Oxford City: *“Opportunities will be taken (including through planning conditions or obligations) to: ensure the inclusion of features beneficial to biodiversity (or geological conservation) within new developments throughout Oxford.”*

In addition to local policy, the NPPF sets out that *“The planning system should contribute to and enhance the natural and local environment by: minimising impacts on biodiversity and providing net gains in biodiversity where possible”* and *“opportunities to incorporate biodiversity in and around developments should be encouraged.”*

In terms of mitigation the Council would expect to see a full assessment of biodiversity gain/loss in order to assess the overall impact of the scheme and ensure the proposed mitigation is sufficient. Full long term (25 years plus) mitigation plans and management for any impacted habitats, protected species including bats and badgers must also be included.

The Request for a Scoping opinion makes reference to Bulstake Stream as a fish migration route and states that a new weir could compromise this. It goes on to state that the removal of a weir on the Hinksey Stream will compensate for this. While the removal of the weir on the Hinksey Stream is welcomed, new structures that act as barriers to fish should be avoided as part of the scheme. Fish passes are expensive as add-ons, but should be possible to design in at low cost.

While there is reference to new river habitat, there appears to be little reference to opportunities to re-naturalise river habitats by the creation of backwaters, riffles etc. This work is an opportunity to explore ways to provide additional habitat / refuges for biodiversity to make the river system more resilient.

The Council welcomes the intention to increase river and wetland habitat in the scheme. Imported seed sources should be avoided, using natural regeneration, locally harvested seed or green hay. Local sources have the advantage of creating a market for important sites and thus strengthening their viability. Meadow creation in general is best carried out on poor soils with low nutrient content; reinstatement of topsoil is unlikely to be the best preparation for these areas. This should be considered at an early stage because it is clear that the movement of substrates is a key engineering consideration.

The initiatives to increase quiet recreational use of the area are also welcomed. However, this should not compromise the important grassland habitats of the area including the Special Area of Conservation, including the extensive management of the area by grazing livestock and hay cropping. Direct conflicts between people and livestock are an obvious concern; an indirect effect also of concern is the fouling of hay crop by dogs making it unsellable.

Land Quality

These comments only relate to the project footprint within the boundary of Oxford City Council.

The Technical Memorandum "Oxford Flood Alleviation Scheme: Request for Scoping Opinion", dated September 8th, 2016, revision 5, produced by ch2m, outlines the proposed project, surveys planned, known environmental issues, and an outline for the proposed EIA scope.

It is agreed that the largest impacts for land contamination will be associated with construction in the areas of the former landfills. The proposed scope of the EIA is focused on the former landfill that is now the Kendall Copse Community Woodland. While it is acknowledged that there are other historic landfills within the area of the scheme, namely at Coldharbour and Redbridge Park and Ride, it is stated that these will not directly be affected by the scheme. However, drawing A4.01.200 shows a new culvert being placed partially in the southwest part of the Redbridge Park and Ride. This would presumably have direct and potentially significant effects on the former landfill and surrounding environment, and therefore should be considered in the scope of the EIA. Further, there is another former landfill not mentioned in the technical memo which is east of Redbridge Park and Ride, called Rivermead. The scheme overview in Figure 1 shows the footprint running adjacent to this former landfill. Any potential effects on this former landfill and surrounding environment as a result of the scheme should be included in the scope of the EIA.

Land contamination is proposed to be included in the EIA for the construction phase but is considered not significant for the operation phase. As the former landfill areas are to be significantly engineered in the development of this scheme, maintenance and monitoring may be required to ensure there are no breaches of leachate to the new channel or surrounding environment.

It is stated that no soil sampling will be undertaken for the EIA, but some will be undertaken after the planning application to test what precautions will be needed to prevent pollution and to determine the waste classification of excavated materials. The Council is aware that some soil sampling has already been carried out in the Kendall Copse former landfill for this scheme which would be helpful to inform the assessment of potentially significant effects from this development.

Land contamination risk assessments should be carried out in accordance with the Environment Agency guidance 'Model Procedures for the Management of Contaminated Land' (CLR11), BS 10175 and any other relevant guidance. The risks from all relevant sources to all relevant receptors should be assessed to help determine whether any significant effects would result from this development to the environment, and inform what types of mitigation would be necessary.

There are two other potential developments which may have cumulative effects on this scheme. There is a proposal for an expansion of the Seacourt Park and Ride

and a proposal for a waste recycling centre to be built on the Kendall Copse former landfill.

Air Quality

In terms of Air Quality, the report identifies the following

'The number of vehicles required and the proposed duration of works equate to approximately one vehicle movement each way on the A34 every 5 minutes during working hours while earthworks are being undertaken (the earthworks season is approximately mid-March to late October, with the ground too wet for large-scale excavation in winter). This peak traffic level will apply for approximately 15 months within the 3-year construction period.'

The proposed project would therefore have the potential to have a significant impact on air quality and so this should be included in the Environmental Statement.

The Request for a Scoping Opinion includes a section outlining the approach to the air quality assessment:

Our assessment will focus on the construction phase as there is no mechanism for significant air quality effects to be caused during operation.

The key effect on air quality during construction will be increased traffic emissions due to construction vehicles. We will model both the direct emissions from vehicles taking spoil away from the site and indirect emissions from vehicles encountering increased congestion. We do not anticipate any significant effect from direct emissions of construction plant, due to the distance between the works and the nearest residential properties. The routes taken by HGVs carrying materials for the scheme, and the knock-on effects on traffic congestion, will be assessed for the traffic impact assessment and this information will be the key part of the air quality assessment.

Dust emissions may result from the excavations and from temporary storage areas. Dust caused by these activities is not anticipated to present any health issues, but may cause nuisance if not managed. We will include this within the scope of the assessment.

The Council agrees with this approach, but would expect any modelling undertaken to follow the guidelines outlined in Defra's Local Air Quality Management Technical Guidance (TG16) April 2016 and the Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) Guidance on land-use planning and development control: Planning for air quality 2015 v1.1. Any modelling would be expected to include a baseline scenario, and a future scenario with and without development. The Council would also expect some form of sensitivity analysis taking into account analysis by Defra showing that historical NO_x and NO₂ concentrations are not declining in line with emission forecasts, on the basis of no future reductions in NO_x/NO₂ concentrations (i.e. considering the potential effects of the proposed development against the current baseline).

Carbon Emissions

The assessment of carbon emissions from the scheme using the Environment Agency's Carbon Calculator tool is encouraged and the Council would expect to see evidence that the emission of carbon has been reduced where ever possible, such

as through the exclusive use of Euro 6 vehicles where possible for construction and transportation of material.

Trees

With respect to the arboricultural impacts of the scheme, the Council have already provided comments through the public consultation for the design options of the scheme. The EIA Scoping Report should include a Landscape Visual Impact Assessment; this should incorporate an Arboricultural Implications Assessment using the methodology of BS.5837:2012-Trees in relation to design, demolition and construction, to be included within the Technical Appendices of the EIA

Archaeology

It is understood that a phased evaluation is underway (EM and magnetometer survey, localised test pits and road closure and evaluation of Old Abingdon Road (forthcoming- and just outside the City)). A further round of evaluation on the floodplain will be required once the current surveys are completed. The EIA will need to include the results of the archaeological evaluation within its assessment. Please accept this letter as the Local Planning Authority's formal consultation response the Scoping Opinion submitted under the provisions of regulation 13 of the 2011 EIA Regulations.

6. Vale of White Horse District Council

On behalf of the Vale of White Horse District Council the following comments are made:

- The Environmental Statement (ES) should cover the matters referred to at Part 1 and Part 2 of Schedule 4 of The Town and Country Planning (Environmental Impact Assessment) Regulations 2011 as amended.
- This authority is satisfied with the topics to be covered in the ES

With regard to some of the specific topics to be covered in the ES this authority has the following comments:

Landscape and Visual Impact Assessment

This authority is satisfied with the scope of the work. It is noted that there is no reference to the methodology to be used. The methodology should use the principles contained in the Guidelines for Landscape and Visual Impact Assessment third edition.

Noise and Vibration

It is noted that this will focus on the direct noise caused by construction plant and by other construction-related vehicles moving around the site highlighting that impacts are most likely during the construction of the raised flood defences. Noise and vibration impacts from the proposal to utilise excavated material for land raising to the west of the A34 near South Hinksey should be included if this option is considered viable.

Ecology and Biodiversity (land and water)

The scope of works appears to cover all relevant species, habitat and vegetation and foreseeable impacts of the proposal.

Air Quality

The scope of works is considered satisfactory.

Contamination

The scope of work is considered satisfactory.

7. North Hinksey Parish Council

Councillors were concerned as to how the company undertaking the work would be disposing of the excavated land/soil and as such would want the County Council to press for a good transport plan. **The narrow and busy North Hinksey Lane should not be used as one of the routes for heavy machinery and works traffic.**

8. Rights of Way/Countryside Access (Oxfordshire CC)

Thank you for this EIA Scoping consultation. It is felt appropriate that the EIA should include impacts on all public rights of way , permissive paths and other informal access routes within the redline and in the vicinity of the development - as well as the users of those resources. These can include walkers, cyclists and equestrians - some of whom may have disabilities or are accompanied by children, wheel or pushchairs and dogs. As well as mitigating impacts the EIA may also look at opportunities for enhancements. More guidance for countryside access is set out in the adopted Rights of Way Management Plan 2015-2025 available at www.oxfordshire.gov.uk/rowip.

9. Lead Local Flood Authority (Oxfordshire CC)

When the Ground water model has been completed it should be submitted to Oxfordshire County Council as The Lead Local Flood Authority for approval. There should be no obstructions to Surface water flows during construction which could cause property flooding.

10. BBOWT

Thank you for consulting the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT) on the above scoping opinion. As a wildlife conservation charity, our comments relate specifically to the protection and enhancement of the local ecology on and around the application site.

BBOWT is generally supportive of the scheme and we welcome the scheme's objective to deliver an overall benefit for ecology. Notwithstanding the outcome of the proposed surveys we believe that the scheme has the potential to deliver ecological gains in the long term by offering opportunities for habitat creation and management.

I note that Natural England (NE) have provided comprehensive advice on what the Environmental Statement (ES) should cover and I don't wish to repeat this here. We endorse NE's comments and consider it particularly important that impacts on statutory and non-statutory designated sites, priority habitats, protected species and notable species are adequately assessed, mitigated and as a last resort compensated. It is not entirely clear to me whether the EIA will only cover the proposed relief channel and associated water courses or a wider geographical area. Considering the complexity of the scheme it seems important that effects are considered not only for the proposed relief channel and affected water courses but all areas that are directly or indirectly impacted upon during construction and operation (e.g. storage areas, compounds, access routes etc). We also consider it important that long-term management and monitoring of the channel and additional habitats is considered and secured from the outset in order to ensure ecological benefits in the long term.

Proposed area for land raising

We are concerned about the lack of detail with regard to the 'proposed area of land raising' west of the A34. Notwithstanding that this idea might not be further pursued, submitted information suggests potential increases in level by up to 1m on land west of the A34, including the field immediately adjacent to Chilswell Valley LWS. Chilswell Valley LWS is designated for its limestone grassland but also includes an area of calcareous fen, a nationally and locally rare habitat. For comparison this habitat is also found east of Oxford at Sydlings Copse SSSI, where it is one of the reasons why the site is designated as a site of national importance. Both the limestone grassland and the calcareous fen depend on low nutrient levels and appropriate water flows. Chilswell Valley is fed by a line of springs along the northern edge of the valley, directly adjacent to the field that is being considered for spoil disposal. The close proximity of high-intensity farmland to the site already adversely affects the nutrient levels within the LWS and we are concerned that the placement of additional potentially nutrient-rich soil might affect hydrology and nutrient levels on the site further.

More information is required should the placement of spoil on this land be pursued further. This should include a hydrological survey to help the understanding of hydrological flows in the area and to assess potential impacts on the site. More information on proposed levels, soil make-up, nutrient levels and the after use of the land should also be provided.

Net gain in biodiversity

The National Planning Policy Framework (NPPF) states in para. 109 that the planning system should *"... contribute to and enhance the natural and local environment by: minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;"*

It can be difficult to judge whether a net gain in biodiversity has been achieved. The most objective way of assessing this in a habitat context is the application of the

habitat impact assessment metric created as part of the DEFRA Biodiversity Offsetting pilots (<https://www.gov.uk/government/collections/biodiversity-offsetting>). Such metrics are used by many developers and their use has been upheld by the planning inspectorate as an appropriate mechanism for achieving ecological aims. We recommend for the metric to be used as an additional means to help demonstrate and quantify the ecological benefits of the scheme.

The development is located in the Thames and Cherwell CTA (Conservation Target Area). CTAs are some of Oxfordshire's most important areas for wildlife and they indicate where targeted conservation action will have the maximum benefit. In line with the aims of this designation and the requirement of the NPPF, opportunities for habitat creation and management should be maximised. We are keen to see ecological enhancements being considered not only in the immediate relief channel and water courses but beyond the directly affected areas. We also recommend that opportunities for sensitively designed access within the area are explored. The slopes west of the A34 including Chilswell Valley LWS form part of the Oxford Heights West CTA. Being mindful that Chilswell Valley LWS is one of three locally designated sites in short distance from each other (the other two are Limekiln Copse and Valley LWS, Harcourt Hill Scrub LWS) significant ecological benefits could be achieved by increasing buffers and by creating better habitat connections between the sites. We therefore believe that the area could offer good opportunities for delivering biodiversity gains by replacing high intensive agricultural use between the sites with habitats of higher conservation value, e.g. diverse grasslands. This could form part of compensatory measures that might be required as part of the scheme. I hope that these comments are useful; should you wish to discuss any of the matters raised, please do not hesitate to get in touch.

11. Arboricultural Officer (Oxfordshire CC)

With regards to the Scoping Opinion for a Flood Alleviation Scheme at Land from North of Botley Road to New Hinksey in the parishes of North Hinksey, South Hinksey and Kennington.

The application is acceptable in principle from an arboricultural perspective dependent on the findings of the intended BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations and mitigation tree planting proposed.

12. Oxford Preservation Trust

Oxford Preservation Trust (OPT) thanks the County Council for the opportunity to respond to the Scoping Opinion submitted by the Environment Agency (EA) regarding the above scheme.

The aims and objectives of OPT are to protect and enhance Oxford and its green setting which we have been doing since 1927. As part of our overall work, we own land in and around the city. This includes a considerable area which will be affected, directly and indirectly, by the scheme.

We are pleased to see that the scope of the intended EIA will address the sensitive nature of the site which is to the west of Oxford, an area where heritage, landscape and views are paramount to the character of Oxford's setting, history and importance on an international stage. Over 25% of the area over which the scheme passes is on OPT land, to which must be added the surrounding land which will be impacted upon, some of which OPT has ownership of, and the rest we have a wider interest in through our more general role as long term custodians of Oxford.

We would wish it to be known that we have had some conversations with the EA at various points up to this stage. We still await much requested information on how the scheme is to work, which is a vital part of the overall picture. We do not have the information, at present, on which to form a judgment and at this stage neither support, or object to the scheme.

Overall, this is a useful document. However, much is predicated on the agreement of the landowners and effective long term management and maintenance of the scheme, where there is little conversation taking place on either, and on the necessary funding being available throughout the period.

We have set out below both our opinion on the proposed scope of the EIA, as set out in this Request for a Seeping Opinion.

Geographical Scope of the EIA

In our view the proposed geographical scope does not cover a wide enough area In particular:-

- The EIA appears to only cover the area needed for the channel, marked blue and green on the plans, and not for the surrounding land. We would suggest that the impact of the scheme will be much wider than the area shown and that the EA should be required to carry out an EIA on all of the OPT land affected, together with other adjoining unbuilt land, from the railway to the east and the A34 to the west.
- We note that no EIA will be carried out on the land immediately downstream of the scheme in the Kennington area and for the OPT land owned here, as the proposed scheme will no longer extend this far to the south. We are concerned that there will be a potential environmental impact on this area, regardless, due to the scale of the changes that are to be made upstream, and would like to see the EIA broadened to include this area.

Materials Management for the Scheme

We note the 390,000 cubic metres of spoil to be taken off site, equating to 43,000 lorry movements each way over the construction period, which will surely have a considerable impact on the local environment

during this time. We are keen to understand what the environmental impact of moving so much material will be and feel this should be included in the EIA. We would suggest that all land where any spoil is to be deposited should be included in the area covered by the EIA.

Consultation with Landowners

There are a number of sections in the Request for Scoping Opinion where reference is made to "discussions with the landowner" in relation to use and management, which has an effect on the operational phase as set out in Table 1. We question how this can be included in the EIA with such certainty when there has as yet been very little discussion with landowners. Such discussion should be part of the EIA so that it is clear what can be achieved in the short and longer term.

Ecology and Biodiversity

The section on ecology and biodiversity suggests that the creation of a certain amount of additional wetland habitat will be necessary to outweigh the loss of terrestrial habitat. However, it is unclear as to how this loss of terrestrial habitat has been quantified or valued and thus what formula has been used to calculate the amount of new habitat is required to compensate.

We are pleased to see the references in the document to the nationally scarce MG4 grassland community at Hinksey Meadow and re-iterate that we are happy to share our botanical surveys of this area. However, we cannot accept the view that this habitat can be translocated as this is at odds with national expert advice.

Landscape and Visual Impact

We note that this document acknowledges the significant value of the area around the proposed scheme in providing the setting and views of Oxford and its literary connections and importance. We were pleased to see the reference to the Assessment of the Oxford View Cones Study 2015 undertaken in a partnership with Oxford City Council, OPT and Historic England* as a key document in assessing the impact on the area. We would draw attention to the need to consider the views looking out from high points in the City as well as looking inwards, which forms part two of this study, which is incomplete.

Archaeology

We would draw attention to the use of the name 'Monks' Causeway' which is not recognised by OPT and seems to have appeared recently. This area should be looked at in advance of the work as it is, like the Abingdon Road causeway, likely to be of medieval date, possibly built by the ferrymen of North Hinksey, but

could conceivably be Roman, since it aligns directly with a probable Roman road and crossing.

Public Access to the Project Area

We would like to express our major concern at the effect on public access to this area for those who use it on an everyday basis to get to work and school, to visit and live, during the three-year construction period. We would suggest that ways of mitigating against this should be added to the scope of the EIA and should also be a condition of any permission that might be granted.

Long term Management

The following comment is made in the context of our comments above regarding consultation with landowners. The needs and reality of long-term management for the Channel, and for the whole area to the west of the City, should be included within the EIA as this will be crucial to the scheme's success. We note the mention of the need for "maintenance access tracks" in the longer term something that has not been mentioned before and should be included in the EIA also.

Comments on Table 1 - Key issues for the EIA Report

We have reviewed Table 1 and would suggest the following changes:

Column: Operational Phase

"Included" is changed to "Key Issues" under:

- Ecology and Biodiversity (both water and land)
- Cultural Heritage
- Recreational use of the project area (which we would describe as Public Access- see paragraph above)

*please note that the study is published by Historic England and not English Heritage as stated in the text.

13. Oxford Green Belt Network

Thank you for your letter inviting the Oxford Green Belt Network (OGBN) to comment on the request for a Scoping Opinion in connection with the above scheme. We have commented in the past on the Environment Agency's plans as they have evolved and we examined this latest request at a meeting of OGBN on 10th October.

The Request for a Scoping Opinion appears to cover the topics that need to be investigated in drawing up an EIA, and other organisations with greater professional

knowledge will no doubt comment on matters like the impact of changes in groundwater movement on ecology, but we have two particular concerns of our own that we would like to stress.

The first relates to Landscape and Visual Impact. The term 'iconic' is rather overused these days but it is particularly relevant to the area that will be affected by the Flood Alleviation Scheme. Of all the areas of land that contribute to the character and setting of Oxford there is none so iconic or precious as this land below the Hinksey Hills and across the meadows towards the city. The Request for a SO rightly mentions the views of the spires from the hills and the association of the land with literary and artistic figures like Arnold and Turner.

The Green Belt is, of course, meant to help protect such areas and we are concerned at the impact that the Flood Scheme with its engineering works, bunds and other changes will have on this iconic landscape. Bodies like the Oxford Preservation Trust have worked tirelessly over many years to acquire and manage land with the very aim of protecting this landscape and the views across it and one can only feel anxious about the impact that the proposed works will have. For our part we can only ask that the greatest attention is paid to the effect on the landscape and its visual amenity that this Scheme could have, both during the construction phase and afterwards.

Our other concern relates to what are described as Recreational Uses. We have been worried in the past by suggestions, particularly from boat clubs, that the new channel might be used for organised recreational uses. The Green Belt is intended for informal recreation like walking, and not for the kind of organised sports that attract buildings and other structures. There is a reference on page 18 of the Request for a SO to cycling, riding and boating that worries us and we would like to ask that when this matter of recreational use is looked into the assumption should be that there will be none of what we refer to as organised activities, but that future recreational use will continue to be on the same low key basis that respects the landscape quality of the area as at present.

In the past we have urged the Environment Agency to pay as much attention as possible to headwater management in the catchment area of rivers like the Windrush and Evenlode in order to reduce as far as possible the amount of flood water reaching Oxford. We have been assured that this is being done but, of course, it is not as eye-catching as the Scheme proposed for the Hinksey Meadows. So if there is any scope at this stage for looking further into alternatives to this horrendously expensive and hugely disruptive Oxford Scheme as currently proposed, we would be grateful if that could be pursued.

Finally, I should mention that members of OGBN who live in the Sandford, Kennington and Abingdon areas are still to be convinced that the Oxford Scheme will not increase the possibility of flooding downstream in their localities.

14. Environment Agency

Thank you for contacting us regarding your Environmental Impact Assessment (EIA) scoping opinion consultation for the proposed development noted above. We have

reviewed the information submitted with regards to our remit and have the following comments to make.

Environment Agency position

We have reviewed the submitted Oxford Flood Alleviation Scheme: Request for Scoping Opinion dated 8 September 2016 and prepared by CH2M.

We welcome the proposed scoping in of the following topics: River flow and morphology; Groundwater; Water quality; Ecology and biodiversity (water); Land contamination.

Additional technical comments are provided below.

River flow and morphology

We note that the proposed scheme will result in significant and permanent changes to a number of watercourses. We welcome the proposed assessment of changes to river geomorphology, water flows and sediment transport. In addition, we welcome the proposal to conduct a separate Flood Risk Assessment (FRA) which will assess the flood risk impacts elsewhere of the proposed development both during and after construction.

Within this chapter we also request that the ES has regard to the relevant requirements of the Water Framework Directive and the Thames River Basin Management Plan and the possible impacts of the proposed development on their respective objectives.

Please find further information here:

<https://www.gov.uk/government/collections/river-basin-management-plans-2015#thames-river-basin-district-rbmp:-2015>

Ecology and biodiversity (water)

We support the inclusion of this topic and the aim of the scheme to provide an overall positive impact, although we note that this may be through any loss of terrestrial habitats made up by the increase in the extent and value of river and wetland habitats. We would suggest that the applicant clearly demonstrates where any losses and gains to habitats are made in the ES.

We would wish to review any details regarding any anticipated changes to fish migration routes resulting from the proposed development both during construction and operation. In addition, we welcome the further studies proposed on water voles within the study area and the recognition of the need for mitigation for the otter population known to be active in the area.

Within this chapter we also request that the ES has regard to the relevant requirements of the Water Framework Directive and the Thames River Basin Management Plan and the possible impacts of the proposed development on their respective objectives.

Please find further information here:

<https://www.gov.uk/government/collections/river-basin-management-plans-2015#thames-river-basin-district-rbmp:-2015>

Land contamination

We welcome the focus of this topic on the Kendal Copse former landfill site and on the risks associated with any leachate does not enter the new watercourse.

Final comments

Once again, thank you for contacting us. Please use our reference number in any future correspondence.

15. Network Rail

Network Rail owns, operates, maintains and develops the main rail network. This includes the railway tracks, stations, signalling systems, bridges, tunnels, level crossings and viaducts. The protection of existing and proposed assets is an important consideration.

Network Rail is a publicly funded organisation with a regulated remit it would not be reasonable to require Network Rail to fund rail improvements necessitated by commercial development. It may well be appropriate to require developer contributions to fund such improvements.

On specific matters, whilst we cannot judge if the proposed development is likely to have any Environmental Impact, we would like to inform the following information will be required for Network Rail to assess the planning application.

Details should be included in the flood modelling scheme as to how this project will affect the operational railway and its assets. The storing of water to any depth alongside the operational railway may be an issue for the low lying earthworks. Any culverts being used as part of the Flood Alleviation Scheme will need to be assessed as to the affect this will have on the operational railway, also agreement will need to be reached with Network Rail to use the culverts/ditches.

Network Rail would need to be consulted on any planning application submitted as our primary concern is the safety of the adjacent railway and contact should be made to Network Rail's Asset Protection Engineers, email:

assetprotectionwestern@networkrail.co.uk.

16. Highways England

Thank you for inviting Highways England to comment on the above scoping opinion to the determine the scope of the Environmental Impact Assessment.

Highways England, formerly the Highways Agency, has been appointed by the Secretary of State for Transport as strategic highway company under the provisions of the Infrastructure Act 2015 and is the highway authority, traffic authority and street authority for the strategic road network (SRN). The SRN is a critical national asset

and as such Highways England works to ensure that it operates and is managed in the public interest, both in respect of current activities and needs as well as in providing effective stewardship of its long-term operation and integrity. In the case of this development proposal, our interest is in the A34.

We have reviewed the information provided. There is unlikely to be a direct impact from the main excavation works (figure 1 of Technical Memorandum) to the safe and efficient operation of the A34, however we request that the A34 is considered at all stages of the development of the scheme.

It is understood that there will be approximately 12 movements per hour each way during on the A34 during working hours (earthworks season mid-March to late October) throughout the construction period. We strongly recommend that the construction management plan considers measures to reduce movements during peak hours to minimise any potential impacts to the safe and efficient operation of the A34.

We note the proposal to create a potential new slip road onto the South Hinksey Junction. We request that the Road Safety Audit undertaken considers the safety of the A34. Any potential impacts to the roundabout (managed by Oxford County Council) has a direct impact to the A34, particularly those exiting the A34 which is a concern to road safety. We look forward to further discussions on this proposal.

17. Historic England

Thank you for your letter of 22nd September consulting us about the above EIA request for a scoping opinion.

This development could, potentially, have an impact upon a number of designated heritage assets¹ and their settings, including the scheduled monuments known as Old Abingdon Road Culverts (List no. 1408790), and Grandpont Causeway (List no. 1007486); and the North Hinksey Conservation Area. In line with the advice in the National Planning Policy Framework (NPPF), we would expect the Environmental Statement to contain a thorough assessment of the likely effects which the proposed development might have upon those elements which contribute to the significance of these assets.

¹ A Designated Heritage Asset is defined in the National Planning Policy Framework as 'A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation'.

We would also expect the Environmental Statement to consider the potential impacts on non-designated features of historic, architectural, archaeological or artistic interest, since these can also be of national importance and make an important contribution to the character and local distinctiveness of an area and its sense of place. This information is available via the local authority Historic Environment Record (www.heritagegateway.org.uk) and relevant local authority staff, and we welcome the desk-based assessment work which has been carried out already. We would strongly recommend that you involve the Conservation Officer of the relevant local authorities and the archaeological staff at Oxfordshire County Council in the development of this assessment. They are best placed to advise on: local

historic environment issues and priorities; how the proposal can be tailored to avoid and minimise potential adverse impacts on the historic environment; the nature and design of any required mitigation measures; and opportunities for securing wider benefits for the future conservation and management of heritage assets.

The assessment should also take account of the potential impact which associated activities (such as construction, servicing and maintenance, and associated traffic) might have upon perceptions, understanding and appreciation of the heritage assets in the area. The assessment should also consider, where appropriate, the likelihood of alterations to drainage patterns that might lead to *in situ* decomposition or destruction of below ground archaeological remains and deposits, and can also lead to subsidence of buildings and monuments.

We have the following comments to make regarding the content of the Scoping Request. The proposal to carefully consider views and view cones is welcome. We are pleased to see that archaeological field evaluation will be scoped into the EIA – in particular, we advise that it is very important that adequate evaluation, including trenching, is carried out on Old Abingdon Road where it is possible that medieval (and possibly earlier) causeway remains survive which are of equal (i.e. national) importance to those which are currently scheduled. The results of this evaluation should be included in the EIA.

18. Public Health England

Thank you for including Public Health England (PHE) in the scoping consultation phase of the above application. Our response focuses on health protection issues relating to chemicals and radiation. Advice offered by PHE is impartial and independent.

If you require further input from PHE in relation to this planning application we recommend that all aspects relevant to public health and exposure to environmental hazards are summarised in one section. We understand that the applicant will wish to avoid unnecessary duplication and that many issues including air quality, emissions to water, waste, contaminated land etc. will be covered elsewhere in the Environment Statement (ES). PHE however believes the summation of relevant issues into a specific section of the report provides a focus which ensures that public health is given adequate consideration. The section should summarise key information, risk assessments, proposed mitigation measures, conclusions and residual impacts, relating to human health. Compliance with relevant guidance and standards should also be highlighted.

In terms of the level of detail to be included in an ES, we recognise that the differing nature of projects is such that their impacts will vary. Any assessments undertaken to inform the ES should be proportionate to the potential impacts of the proposal, therefore we accept that, in some circumstances particular assessments may not be relevant to an application, or that an assessment may be adequately completed using a qualitative rather than quantitative methodology. In cases where this decision is made the applicants should fully explain and justify their rationale in the submitted documentation. The attached appendix outlines generic areas that might be addressed by all applicants when preparing an ES. We are happy to assist and discuss proposals further in the light of this advice, though for a project of this nature we would not expect to be consulted further.

Yours sincerely,
Graham Urquhart
Principal Environmental Public Health Scientist

Appendix: PHE recommendations regarding the scoping document

General approach

The EIA should give consideration to best practice guidance such as the Government's Good Practice Guide for EIA¹. It is important that the EIA identifies and assesses the potential public health impacts of the activities at, and emissions from, the installation. Assessment should consider the development, operational, and decommissioning phases.

It is not PHE's role to undertake these assessments on behalf of applicants as this would conflict with PHE's role as an impartial and independent body.

Consideration of alternatives (including alternative sites, choice of process, and the phasing of construction) is widely regarded as good practice. Ideally, EIA should start at the stage of site and process selection, so that the environmental merits of practicable alternatives can be properly considered. Where this is undertaken, the main alternatives considered should be outlined in the ES².

The following text covers a range of issues that PHE would expect to be addressed by the applicant. However this list is not exhaustive and the onus is on the applicant to ensure that the relevant public health issues are identified and addressed. PHE's advice and recommendations carry no statutory weight and constitute non-binding guidance.

Receptors

The ES should clearly identify the development's location and the location and distance from the development of off-site human receptors that may be affected by emissions from, or activities at, the development. Off-site human receptors may include people living in residential premises; people working in commercial, and industrial premises and people using transport infrastructure (such as roads and railways), recreational areas, and publicly-accessible land. Consideration should also be given to environmental receptors such as the surrounding land, watercourses, surface and groundwater, and drinking water supplies such as wells, boreholes and water abstraction points.

Impacts arising from construction and decommissioning

Any assessment of impacts arising from emissions due to construction and decommissioning should consider potential impacts on all receptors and describe monitoring and mitigation during these phases. Construction and decommissioning will be associated with vehicle movements and cumulative impacts should be accounted for.

¹ Environmental Impact Assessment: A guide to good practice and procedures - A consultation paper; 2006; Department for Communities and Local Government. Available from:
<http://webarchive.nationalarchives.gov.uk/20120919132719/www.communities.gov.uk/documents/planningandbuilding/pdf/151087> ² DCLG guidance, 1999 <http://www.communities.gov.uk/documents/planningandbuilding/pdf/155958.pdf>

We would expect the applicant to follow best practice guidance during all phases from construction to decommissioning to ensure appropriate measures are in place to mitigate any potential impact on health from emissions (point source, fugitive and

traffic-related). An effective Construction Environmental Management Plan (CEMP) (and Decommissioning Environmental Management Plan (DEMP)) will help provide reassurance that activities are well managed. The applicant should ensure that there are robust mechanisms in place to respond to any complaints of traffic-related pollution, during construction, operation, and decommissioning of the facility.

Emissions to air and water

Significant impacts are unlikely to arise from installations which employ Best Available Techniques (BAT) and which meet regulatory requirements concerning emission limits and design parameters. However, PHE has a number of comments regarding emissions in order that the EIA provides a comprehensive assessment of potential impacts.

When considering a baseline (of existing environmental quality) and in the assessment and future monitoring of impacts these:

- should include appropriate screening assessments and detailed dispersion modelling where this is screened as necessary
- should encompass all pollutants which may be emitted by the installation in combination with all pollutants arising from associated development and transport, ideally these should be considered in a single holistic assessment
- should consider the construction, operational, and decommissioning phases
- should consider the typical operational emissions and emissions from start-up, shut-down, abnormal operation and accidents when assessing potential impacts and include an assessment of worst-case impacts
- should fully account for fugitive emissions
- should include appropriate estimates of background levels
- should identify cumulative and incremental impacts (i.e. assess cumulative impacts from multiple sources), including those arising from associated development, other existing and proposed development in the local area, and new vehicle movements associated with the proposed development; associated transport emissions should include consideration of non-road impacts (i.e. rail, sea, and air)
- should include consideration of local authority, Environment Agency, Defra national network, and any other local site-specific sources of monitoring data

- should compare predicted environmental concentrations to the applicable standard or guideline value for the affected medium (such as UK Air Quality Standards and Objectives and Environmental Assessment Levels)
 - If no standard or guideline value exists, the predicted exposure to humans should be estimated and compared to an appropriate health-based value (a Tolerable Daily Intake or equivalent). Further guidance is provided in Annex 1
 - This should consider all applicable routes of exposure e.g. include consideration of aspects such as the deposition of chemicals emitted to air and their uptake via ingestion
- should identify and consider impacts on residential areas and sensitive receptors (such as schools, nursing homes and healthcare facilities) in the area(s) which may be affected by emissions, this should include consideration of any new receptors arising from future development

Whilst screening of impacts using qualitative methodologies is common practice (e.g. for impacts arising from fugitive emissions such as dust), where it is possible to undertake a quantitative assessment of impacts then this should be undertaken. PHE's view is that the EIA should appraise and describe the measures that will be used to control both point source and fugitive emissions and demonstrate that standards, guideline values or health-based values will not be exceeded due to emissions from the installation, as described above. This should include consideration of any emitted pollutants for which there are no set emission limits. When assessing the potential impact of a proposed installation on environmental quality, predicted environmental concentrations should be compared to the permitted concentrations in the affected media; this should include both standards for short and long-term exposure.

Additional points specific to emissions to air

When considering a baseline (of existing air quality) and in the assessment and future monitoring of impacts these:

- should include consideration of impacts on existing areas of poor air quality e.g. existing or proposed local authority Air Quality Management Areas (AQMAs)
- should include modelling using appropriate meteorological data (i.e. come from the nearest suitable meteorological station and include a range of years and worst case conditions)
- should include modelling taking into account local topography

Additional points specific to emissions to water

When considering a baseline (of existing water quality) and in the assessment and future monitoring of impacts these:

- should include assessment of potential impacts on human health and not focus solely on ecological impacts
- should identify and consider all routes by which emissions may lead to population exposure (e.g. surface watercourses; recreational waters; sewers; geological routes etc.)
- should assess the potential off-site effects of emissions to groundwater (e.g. on aquifers used for drinking water) and surface water (used for drinking water abstraction) in terms of the potential for population exposure
- should include consideration of potential impacts on recreational users (e.g. from fishing, canoeing etc) alongside assessment of potential exposure via drinking water

Land quality

We would expect the applicant to provide details of any hazardous contamination present on site (including ground gas) as part of the site condition report. Emissions to and from the ground should be considered in terms of the previous history of the site and the potential of the site, once operational, to give rise to issues. Public health impacts associated with ground contamination and/or the migration of material off-site should be assessed³ and the potential impact on nearby receptors and control and mitigation measures should be outlined.

³ Following the approach outlined in the section above dealing with emissions to air and water i.e. comparing predicted environmental concentrations to the applicable standard or guideline value for the affected medium (such as Soil Guideline Values)

Relevant areas outlined in the Government's Good Practice Guide for EIA include:

- effects associated with ground contamination that may already exist
- effects associated with the potential for polluting substances that are used (during construction / operation) to cause new ground contamination issues on a site, for example introducing / changing the source of contamination
- impacts associated with re-use of soils and waste soils, for example, re-use of site-sourced materials on-site or offsite, disposal of site-sourced materials offsite, importation of materials to the site, etc.

Waste

The EIA should demonstrate compliance with the waste hierarchy (e.g. with respect to re-use, recycling or recovery and disposal).

For wastes arising from the installation the EIA should consider:

- the implications and wider environmental and public health impacts of different waste disposal options
- disposal route(s) and transport method(s) and how potential impacts on public health will be mitigated

Other aspects

Within the EIA PHE would expect to see information about how the applicant would respond to accidents with potential off-site emissions e.g. flooding or fires, spills, leaks or releases off-site. Assessment of accidents should: identify all potential hazards in relation to construction, operation and decommissioning; include an assessment of the risks posed; and identify risk management measures and contingency actions that will be employed in the event of an accident in order to mitigate off-site effects.

The EIA should include consideration of the COMAH Regulations (Control of Major Accident Hazards) and the Major Accident Off-Site Emergency Plan (Management of Waste from Extractive Industries) (England and Wales) Regulations 2009: both in terms of their applicability to the installation itself, and the installation's potential to impact on, or be impacted by, any nearby installations themselves subject to the these Regulations.

There is evidence that, in some cases, perception of risk may have a greater impact on health than the hazard itself. A 2009 report⁴, jointly published by Liverpool John Moores University and the HPA, examined health risk perception and environmental problems using a number of case studies. As a point to consider, the report suggested: "Estimation of community anxiety and stress should be included as part of every risk or impact assessment of proposed plans that involve a potential environmental hazard. This is true even when the physical health risks may be negligible." PHE supports the inclusion of this information within EIAs as good practice.

⁴ Available from: <http://www.cph.org.uk/wp-content/uploads/2012/08/health-risk-perception-and-environmental-problems--summary-report.pdf>

Liaison with other stakeholders, comments should be sought from:

- the local authority for matters relating to noise, odour, vermin and dust nuisance
- the local authority regarding any site investigation and subsequent construction (and remediation) proposals to ensure that the site could not be determined as 'contaminated land' under Part 2A of the Environmental Protection Act
- the local authority regarding any impacts on existing or proposed Air Quality Management Areas

- the Food Standards Agency for matters relating to the impact on human health of pollutants deposited on land used for growing food/ crops
- the Environment Agency for matters relating to flood risk and releases with the potential to impact on surface and groundwaters
- the Environment Agency for matters relating to waste characterisation and acceptance
- the Clinical Commissioning Groups, NHS commissioning Boards and Local Planning Authority for matters relating to wider public health.

Annex 1

Human health risk assessment (chemical pollutants)

The points below are cross-cutting and should be considered when undertaking a human health risk assessment:

- The applicant should consider including Chemical Abstract Service (CAS) numbers alongside chemical names, where referenced in the ES
- Where available, the most recent United Kingdom standards for the appropriate media (e.g. air, water, and/or soil) and health-based guideline values should be used when quantifying the risk to human health from chemical pollutants. Where UK standards or guideline values are not available, those recommended by the European Union or World Health Organization can be used
- When assessing the human health risk of a chemical emitted from a facility or operation, the background exposure to the chemical from other sources should be taken into account
- When quantitatively assessing the health risk of genotoxic and carcinogenic chemical pollutants PHE does not favour the use of mathematical models to extrapolate from high dose levels used in animal carcinogenicity studies to well below the observed region of a dose-response relationship. When only animal data are available, we recommend that the 'Margin of Exposure' (MOE) approach⁵ is used.

5 Benford D et al. 2010. Application of the margin of exposure approach to substances in food that are genotoxic and carcinogenic. Food Chem Toxicol 48 Suppl 1: S2-24

19. County Councillor Suzanna Pressel

The residents I represent are very keen for this to go ahead as soon as possible, in order to protect their homes from flooding.

The main concern is about the loss of trees, so please insist that any which are removed are replaced nearby, if possible in such a way as to retain a screen between the houses and the hideous retail sheds.

People are also worried about the disruption of the work and the danger that HGVs can present to cyclists.

Please make sure you consult the Oxford Preservation Trust, who own Hinksey Meadow (I'm an OCC appointed trustee), and to local botanists (I'm forwarding this to one of them, Tim King, who feels strongly about this project).

20. Ramblers Association

Any scheme that works will be a benefit. There should be a public bridleway along the line of the scheme, preferably connecting the two Hinkseys

21. Oxford Badgers Group

The OBG has already outlined concerns about the scheme in the recent consultation. We feel the following issues should be part of any scoping exercise: Impact on natural environment and habitat of species, in particular badgers. The current plan for land north of Botley Road would lead to loss of important badger setts and habitat including woodland/grassland. Any scheme should safeguard Oxford's dwindling wildlife rather than put it at risk.

Physical changes: Any change of use of land would put habitat/species/flora/fauna at risk. Wild areas are important for species, with the unprecedented level of development. Conflict of interests around the scheme: the City Council wants to extend Seacourt Park and Ride on Flood Plain and has continued to allow building along Botley Road, the County Council wants a Park and Ride outside the City centre and the EA wants to spend millions on flood defences. Need for a more coherent rather than piecemeal strategy.

22. Hogacre Common Eco Park

The Directors of Hogacre Eco Park consider Hogacre Eco Park (which is leased from Corpus Christi College) needs to be identified and included as worthy of assessment in the Scoping Report. Reading the submitted report it is apparent that the area of the park and its surroundings will be considerably affected by the flood alleviation proposals and that we consider that this must be properly investigated and fully described in the Environmental Impact Assessment.

It may be helpful for Oxfordshire County Council to be fully aware that the development of the park commenced in 2010 with the aim of diversifying the wildlife and ecological habitat in Oxford, having a positive effect on climate change and providing environmental education and enjoyment of nature. It is not only a community resource and attraction for local residents of South and West Oxford but also reaches out to the wider Oxford community, visitors from the wider UK, together with a significant number of international visitors who have come to work and study in Oxford. Our park contains woodland areas, an orchard of local Oxfordshire trees, beehives, OxGrow (a community organic garden), a Forest School, a small wind turbine, a pavilion that hosts community, educational and other events and also has a café in summer. We are in the process of creating a grass and wildflower floodplain meadow which may well have the potential to be classified as MG4. We also would like to develop further initiatives related to demonstrating the importance of sustainability. The Eco Park has permissive paths too which are currently well used locally.

We are bordered by the Hinksey stream and Eastwyke ditch and it is clear that the proposals will seriously affect the water flow and levels in these streams and the ground water levels as a whole. Indeed it is also seems that during the three years'

construction period there could be even greater disturbances to our functioning. We believe like Oxford Preservation Trust that the Scoping report in its entirety should cover all the land west of the railway line where we are located. Consideration clearly should be given to any changes that will affect our plans and functioning in respect of not only the ecology and wildlife habitat, but also to the effect that will have on our crop growing and agricultural functions, and closely related and connected to that our cultural, educational and recreational importance.

23. Tim King

I wish to comment on the document: 'Oxford Flood Alleviation Scheme: Request for Scoping Opinion' sent by Penny Burt to you and dated 16 September 2016. I have kept abreast of the FAS from the start, have read all the documents including the cost-benefit analyses, attended the July stakeholders meeting at the EA, and know the waterways particularly well, having grown up at Harcourt Hill and lived in Oxford most of my life. Councillor Pressel sent me your letter to her, dated 22/09/16, and informed you that she had sent it to me. I shall only comment on Table 1 in the Technical Memorandum, 'Key Issues for the EIA report'. In a separate e-mail to Penny Burt (copy to you) I shall comment further on details.

Key Issues for the EIA report

In the Operation column, River flow and morphology, Groundwater, Ecology and Biodiversity (land) are 'Included'. and Archaeology and 'Land Contamination' as 'not significant'. In my view these 'included' issues should be upgraded to 'Key issue' and the 'not significant' issues to 'Included and I shall briefly explain why.

River Flow and Morphology and Groundwater Now that the details of the project have been worked out, it is critical that EA is forced to produce some convincing hydrological data from their computer modelling about how the primary and secondary channels will work. There are very few precedents in the UK for such a scheme. The promised hydrological data has not yet materialised. We need to know, say, on the basis of (a) the measured daily flows of the Thames from King's Lock southwards, over the last ten years, and (b) on the basis of the completed scheme (i) how much extra water would flow down the Bulwark stream from the Thames (ii) on how many days the secondary channel would be flooded (which would allow us to predict the maintenance problems) and (iii) the effect of the projected scheme on the flooding of Osney Mead, the Abingdon Road, and houses. Upgrading the Operation to a 'key issue' would certainly delay the project a little, but it would force the EA to produce data rather than offer reassuring platitudes, and help to ensure that all this landscape disruption does not turn out to be an expensive white elephant. Would it be worth creating a secondary channel if it only worth for 15 days a year and required expensive maintenance?

Ecology and Biodiversity (Land) and Land Contamination

As rare vegetation types become scarcer, their value increases. There has obviously been much discussion recently about 'natural capital' and how the wildlife, aesthetic and historical value of land to the community can be financially quantified. I'm on the Port Meadow Management Committee and know it very well. In my view, the wildlife

value of these sites decreases in the order Port Meadow = Hinksey Meadow > Marston Meadows SSSI > Iffley Meadows SSSI I'm impressed by the steps which the EA has taken to reduce the impacts of the scheme on these sites.

Understandably, the EA has emphasised the statutory designations which have an effect in planning terms (e.g. SSSIs), and those species which, rather arbitrarily, have been selected by EC legislation as worthy of special protection. BUT since these designations were made many of the sites have changed considerably (for example, I have recommended to Oxford Brookes that they should take their biology students to Hinksey Meadow rather than Iffley meadows). So the suggestion that the wildlife value of new habitats created might be greater than the special habitats lost is a matter of opinion which should be examined in more detail.

The effects on the dumping site (e.g. near the Chiswell Valley) must also be included in the scope of the assessment. If 400,000 cubic metres of soil will be dumped at say one metre depth the area covered will be 40 hectares (a sixth of a square mile) and much of this will be on slopes where subsequent slumping of clay downslope is possible - and there is an SSSI downslope?. This large area and depth of clay will considerably affect the permeability of the soil to water (and there is a precious spring with unusual fen vegetation nearby which depends on water percolating through the current cornbrash) and it may also cause much water to run down over the surface, itself causing problems to householders and even the A34. This needs to be included in the scope, especially because it comes under the category of 'land contamination'.

Archaeology

Probably not a 'key issue' (although in this case the excavations down the Abingdon Road might delay the whole project considerably) but certainly should be 'included'. Tom Hassall, the archaeologist, came on my walk around Hinksey Meadow In June. The "Monks Causeway", the path from 'the Fishes' at North Hinksey towards Osney Mead, probably had a Roman origin and the original 'Oxenford' was probably across the Seacourt Stream (at that time the main course of the Thames) at that point. Tom Hassall considered this an ideal opportunity for excavation at last. This is why (apart from delays to the project, and judging how extensive the Abingdon Road excavations might be in the light of the traffic disruptions) Archaeology should in my view been upgraded to 'included'.

Cannot resist a final comment. We urgently need some hydrological data, because it might be possible for the EA, to assess the benefits of merely building the three bunds to house flooding and traffic disruption. This would be far cheaper but might 'solve' 50% of the problems. It could be a two stage project; build the bunds and dig out north of the Botley Road first. If they did not work, attempt the rest.

24. Ben Sawyer

In addition to the points raised by Natural England, when deciding on the environmental impact of routing the bund in the area north of Botley Road, the EIA should take into account the Pontbren study ([Marshall et al., 2014](#) "*The impact of rural land management changes on soil hydraulic properties and runoff processes*"). The current route for the bund will destroy a copse of trees (and also destroy multiple badger setts). By routing the bund to the north of the copse, the trees, wildlife and

badger setts will be preserved. The exclusion of the copse from the flooded area may slightly reduce the size of the floodplain but the removal of the trees may massively (potentially by 60 times) reduce the capacity of that land to hold ground water.

During recent flooding events, the houses on Botley Road to the west of Bulstake Close were threatened predominantly by groundwater coming up through the floor, not by water coming through the back gardens.

25. Dr Judith A Webb

I write in my capacity and experience of being a member of both the Floodplain Meadows Study group of the Ashmolean Natural History Society of Oxfordshire (ANHSO) and as Flora Guardian for creeping marshwort *Apium repens*, within the Oxfordshire Flora Group (OFG) of the ANHSO. However my response that follows is purely personal and not a group response from ANHSO.

I write also in my capacity as adviser and contracted reporting ecologist for the BBOWT/Oxford City Council 'Wild Oxford' Project in the Chilswell valley area.

Response for Area 2, Botley road to Willow Walk

The indicative design of the second stage channel in this area **in my opinion is still far too wide and therefore unacceptable.**

It still takes out considerable area of the best bit of ancient/historic valuable floodplain meadow MG4 vegetation (meadow foxtail *Alopecurus pratensis* – great burnet *Sanguisorba officinalis* community with Fritillaries) in **Osney Mead (Botley Meadow/Hinksey meadow) Local Wildlife Site 40Y03.**

I have previously explained the value of this community in this site, great value is attached to it because it is **where it has always been** (more than 100s of years, may be many hundred years, look at the documentary evidence provided by T King). Out of 13 ha of meadow here, there may be as much as **5.5 - 7.5 hectares of MG4 community, which is a far greater amount in good condition** than in nearby New Marston Meadows SSSI adjacent to the Cherwell. This SSSI is designated specifically for this now rare meadow community, but only **4.38 ha of typical MG4 vegetation is left** in New Marston Meadows, which is only **9.9% of its total area...**

Like New Marston Meadows SSSI and Oxford Meadows SAC, consider that Osney/Botley/Hinksey meadow will **have never been ploughed** and always have been a valuable biodiverse hay meadow, adapted to the hydrological regime in that exact position, with an undamaged soil structure with a vast store of carbon locked in the humus content.

Osney/Botley/Hinksey meadow should be an MG4 designated SSSI and therefore should be treated as such and be inviolate. There will never be any more of these ancient floodplain meadows in their historic positions and any attempt at turf re-location or meadow re-creation using green hay is likely to result in only a poor facsimile meadow at best for many reasons; ranging from soil structure destruction to possibly inappropriate hydrology and/or possible insufficient appropriate management in the receptor site. Talk to David Gowing of the Floodplain

Meadows Partnership on this. This is not even considering the invertebrates and fungi, which are mostly unknown and will most likely not be transferable. Additionally, re-location or re-creation loses the **historic heritage aspect** of the original meadow completely. **You could move an ancient building stone by stone out of the way of a motorway, but would the re-built building in another location be as valuable heritage as if it was where it had always been?** It would have lost something and always be less valuable and so it will be with any translocated turf from this meadow.

This meadow in its historic position is as much part of the natural heritage of Oxford in the same way as any of the ancient and beautiful buildings. No one would suggest putting a flood alleviation channel through an ancient Oxford building. Nor should this channel damage any historic/precious MG4 vegetation.

The damaging effect of any channel (even a shallow second stage one) will be much greater than the width shown in the indicative design. Even if the excavation haul road is situated in the centre of the channel area, the deleterious 'edge effect' of the margin of the excavated channel will influence many metres into the remaining MG4 meadow. The soil excavation for the channel will cause conditions to be **too dry in summer** in the retained bit of the MG4 meadow for an unknown number of metres, maybe 10 or more out into the meadow, causing community change away from MG4. Add to this the known predicted climate change to in the future (happening already) to hotter drier summers with less rainfall. Mowing of the meadow for hay with machinery will most likely not be able to happen right up to the edge of the channel, some metres of the margin will be unmown (headland develops) and the community will change to a ranker one. Walkers are likely to re-instate a trampled footpath along the edge of the channel (or possibly further out into the meadow, as now) eliminating MG4 where it currently exists in the retained meadow area. I therefore suggest there will be a **'damage zone' for the MG4 remaining community of at least 10m beyond the indicated width of the channel.**

The channel as it goes round the pylon is a narrower width that is obviously acceptable. **Keep the channel to this width** all through the meadow in the 'along the Seacourt stream' section. Do not widen it out into the meadow at all then hopefully it will only take out the poor quality vegetation and levee adjacent to the stream. Keep any footpath to the extreme edge of the channel.

I note that in the designed second stage channel there are indications of potential **'small ponds and backwaters in the second stage channel'**. These may be valuable elsewhere where there is a wider second stage channel with more room, but let's do without them here in order to keep the second stage channel as narrow as possible. The priority in this channel area should be protecting the retained meadow area over any habitat recreation.

Response for Area 3 Willow Walk to Devil's backbone

I remain of the strong opinion that the indicative design of a new channel through meadows south of willow Walk, curving round and to the east of the meadow adjacent to Seacourt stream currently occupied by a **Creeping marshwort *Apium repens*** population (Critically Endangered, Schedule 8 species) is **likely to cause**

deleterious hydrological change to drier conditions in the summer in the wet shallow ditch area occupied by this species.

I continue to search for new sites with appropriate hydrology and year round moderately heavy grazing by horses and cattle to translocate away creeping marshwort plants from this meadow. So far this has been an unsuccessful search. The last two translocation attempts to what seemed to be sites with appropriate hydrology and grazing in the Oxford floodplain area **failed due to insufficiently heavy grazing to keep down competing grassy vegetation**. It is proving extraordinarily difficult to find the right grazing regime locally and I remain unconvinced, therefore, that the FAS will provide any appropriate new 'home' for creeping marshwort in the future because providing the appropriate hydrology is just not enough and grazing management of the FAS in the future looks to be a big challenge.

Creeping marshwort had a really poor year on Port Meadow in 2016 with only a very small population visible, perhaps now only a little bigger than the population in this North Hinksey meadow. Only one flower was seen on Port Meadow whilst numerous flowers were on the North Hinksey population. At its site in Lee Valley country park (Walthamstow marshes SSSI) this year, plants recurred thought to be creeping marshwort were possibly mis-identified and are most likely fool's watercress *Apium nodiflorum*. So in the whole country there is now only Port Meadow and North Hinksey meadow for this species and very small populations in both sites.

Possible locations for land raising (dumping of spoil dug out from the channel)

I note the areas outlined in red for spoil disposal in the Chilswell valley area on the other side of the ring road to South Hinksey.

The southernmost area indicated, alongside the Chilswell valley footpath is of most interest to me.

Initially, I thought this southern area might be acceptable to put spoil on because one of the things I am most keen to see happen to this chosen field is that **it goes out of intensive agriculture with heavy chemical fertilizer input into the soil**. This is it is in the catchment of adjacent fen springs and because water quality testing in the springs in the fen areas of the Chilswell valley LWS this spring has shown heavy contamination with nitrate, from arable fertilizers. This is hampering our attempts in the conservation and remediation of these fens in the BBOWT/City Council 'Wild Oxford Project' for which I am adviser and contracted reporting ecologist. Great volunteer effort in cutting and raking off the tall dense reed regularly to bring the fens back to a more biodiverse community will not work well if high nitrate continues to flood into the ecosystem, stimulating strong reed growth all the time. The target community is the short, biodiverse lower nutrient wetland fen it used to be when low intensity extensive grazing existed here, 100years ago.

So, if the southern dumped spoil area is returned to either **low-input grazed permanent pasture or some other low/no input vegetation like new woodland planting**, then I am for it because this will assist in lowering the nitrate level in the adjacent fen springs. A very wide conservation margin?

If it is to be returned to intensive arable after dumping and land raising, then I am definitely against it.

There is one further point to mention. If the dumped spoil contains a high proportion (or is mostly) **alluvial clay**, this might be very un-helpful as this might impede rainwater infiltration in this important catchment zone of the fen springs, mostly at the south west end of the field. Water needs to penetrate freely in this limestone area to enter the aquifer before emerging from the fen springs. If there is a lot of clay, rain will mostly run off and not penetrate the soil. If it runs to the adjacent fen via overland flow, this will be damaging to the fen community as it will contain none of the essential calcium this tufa forming alkaline fen community needs (spring water acquires this in its travel through the limestone aquifer).

If the dumped spoil on this field is mostly limestone gravel or coarser silt which will freely allow rainwater penetration, then this would be good as the adjacent fen springs will still be fed appropriately. This is particularly important in the south western end of that field on the highest ground which is immediately adjacent to the calcareous fen. But this will be just as bad as the current situation if this field is returned to intensive agriculture after the spoil dumping/ land raising.